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Number 8, August 1984

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STABILITY CONTRIBUTES TO SUCCESS OF ATE-1 PLANT

Novosibirsk EKONOMIKA I ORGANIZATISYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 3-4

[Introduction to articles that follow: "ATE-1 Plant: Stability of Production -- Stability of Deliveries"]

[Text] In his speech at a pre-election meeting of the electorate of the Kuybyshev electoral district of Moscow, General Secretary of the CPSU Central Committee K. U. Chernenko empahsized the need to improve management of the economy and to restructure the economic mechanism.

One of the cornerstones of the improvement of the economic mechanism is to strengthen delivery discipline and to increase the responsibility of the manufacturing enterprises for the fulfillment of contractual commitments and orders from the consumers. It is no accident that it is precisely the indicator of sales, taking deliveries into account, that lies at the basis of the recently conducted large-scale economic experiment for expanding the rights and increasing the responsibility of enterprises and production associations for the final results of production and economic activity.

In this connection, the experience of the Moscow ATE-1 plant is of special interest. For 10 years, it has been regularly fulfilling all of its contractual commitments for deliveries. The enterprise has glorious labor traditions. The plant is the forefather of the subbranch of automotive tractor electrical equipment. At the 17th Party Congress in 1934 the people's commissar for heavy industry, Sergo Ordzhonikidze, noted the plant's outstanding victory after it had produced the country's first 200,000 magnetos. Its electrical equipment was used on the first Soviet motor vehicles which travelled the Moscow -- Kara-Kumy route. It was also installed on board our aircraft which completed the first nonstop flight from Moscow to the Far East.

Since that time, the plant has increased its production output dozens of times over. Continuing its labor traditions, the collective of the enterprise is working on improving its output and management of production. Here, a great deal of attention is devoted to improving the interaction between the sales and production services and organizing planning and control over the fulfillment of contractual commitments.

Read the materials in this issue about the experience of the Moscow ATE-1 plant.

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DIRECTOR OF ATE-1 PLANT INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 5-17

[Interview with A. I. Pydrin, director of ATE-1 Plant (Moscow), by economist V. S. Kalinkin: "Efficient Rhythm and Coordinated Actions"]

[Text] [Question] Anatoliy Ivanovich, as we know, many executives are skeptical about the 100-percent fulfillment of commitments for deliveries. They say that this is almost impossible, since not everything depends on the enterprise itself. Transportation workers, material and technical support for production and other external factors exert an influence on deliveries. Or do you, perhaps, have special production conditions and certain difficulties pass you by?

[Answer] We have the same difficulties that are found in any other production. Both transportation workers and suppliers give us a great deal of trouble. Our plant, like others, plays two roles--that of the supplier and that of the consumer. We depend on many production collectives, especially on metallurgists and chemists. Our work, in turn, exerts an influence on automotive and tractor machine building plants and the numerous organizations which use the technical equipment they produce. When playing one role, one must never forget about the other one.

The ATE-1 plant produces alternating current generators, starters, and regulators for trucks, tractors and agricultural machinery--about 760 different kinds and modifications of items. Our products are received by 1,000 plants and organizations. We use about 6,000 kinds of basic and auxiliary materials and batching items. They are delivered to us from 540 enterprises.

We take the standard measures against undisciplined deliveries: we call, we write, we impose fines, we send "pushers," we complain, and in certain cases we duplicate deliveries, creating above-normative supplies of materials at our plant (on the balance commissions, to be sure, we scold the suppliers for "above-normative" supplies and take away their prize-winning positions when summing up the results of intraplant competition of divisions, but still, deep in our hearts, we must admit that it is impossible to do without these). But recently we have been relying more and more on nontraditional methods of

maintaining relations, adhering to the principle of "from mutual complaints--to mutual assistance."

[Question] How are you realizing this principle?

[Answer] If, for example, an associate violates a delivery agreement, we do not begin with imposing a fine, but, rather, we first try to clarify the reasons. Not so long ago the Elektrougly plant in Moscow was not supplying us satisfactorily with carbon brushes for electric engines and generators. At the request of the suppliers, we sent some designers and technologists there. Having seen how the carbon brushes were manufactured, they understood that no amount of fines would help: production was poorly organized, there were many manual operations and the wage system was imperfect. We drew the attention of the enterprise managers to these problems and we ourselves took on the responsibility of helping them to mechanize the production of this item. According to our designers' plan, the nonstandard equipment shop at ATE-1 manufactured a special automated machine tool for producing carbon brushes.

We, in turn, receive help from suppliers too. At one time the generator shop had defective work because during assembly the workers mixed up the ends of the wires. Tags on the ends of the wires did not help. After visiting us, specialists of Mikroprovod decided to manufacture wires of various colors. The defective work came to a halt.

An important condition for the development of cooperation among associates is socialist competition of all-encompassing technological chains. We are extensively developing this form of competition at the plant. And the suppliers of materials and batching items are essentially at the beginning of this chain. Therefore we concluded agreements for socialist competition and creative cooperation with them.

[Question] Transportation workers also affect the fulfillment of the plan for deliveries: for the dispatching of the products and delivery to the consumer depend on them. How are interrelations arranged with them?

[Answer] We have to devote no less attention to them than we do to our other partners, and perhaps even more. We are now receiving approximately 98 percent of the cars and containers we need. This surprises many people, since the average provision of Moscow enterprises with means of rail transportation is kept at the level of 70-80 percent.

It was not easy for us to reach this 98 percent. It required a lot of strain on the nerves, red tape and persistence. When we began to defend our rights and interests before the transportation workers we understood that we were burning our bridges behind us: they would not forgive us for any blunders. This situation forced us to pull ourselves together and to eliminate any slackness in the dispatching of products, which had sometimes existed. The last plant conveyor link had to be given as much attention as it deserves.

Many managers (including us in past times) stop all of their actual activity with the release of the prepared products to the sales warehouse, assuming that everything would take care of itself from then on. But now, when we are

insisting on the number of cars and containers that are ordered, we must keep strictly within the norms for their idle time during loading and unloading. We have equipped the sidings better for cargo work, repaired the means of rail transportation that have been assigned to the plant, and arranged for rhythmic dispatch.

As for the participation of the transportation workers in the all-encompassing competition, this is just as necessary for them as it is for other partners in production. In our opinion, the development of moral and material incentives would contribute to the development of this form of competition. Thus it would be expedient to have a general bonus fund for encouraging the best associated enterprises in the chain. Today the branch separation has made it impossible to create such a fund. It is also necessary to determine the rights and responsibilities of the collectives that are included in the chain of associated workers and to determine the judges of the competition. Apparently the AUCCTU and the USSR State Committee for Labor and Social Problems should develop the necessary recommendations.

[Question] And now tell us, please, about the internal factors, about how the plant production process is arranged for 100-percent fulfillment of the plan for deliveries in keeping with agreements.

[Answer] Many people at the plant will recall that 10-15 years ago we frequently disappointed our consumers even though we fulfilled the production plans and were on fairly good terms with the ministry. Why did such paradoxical situations arise? The production plan and the sales plan were not intercoordinated. The production capacities were not always loaded with the manufacture of products that were envisioned by the contractual commitments. It was necessary to rearrange operational planning and, at the same time, the psychology of the workers, whose thinking went approximately as follows: "If it is possible to receive a bonus by fulfilling any plan, why should we necessarily fulfill the assignment in the products list?..." Therefore even before the official introduction of the indicator of product sales taking deliveries into account, it was necessary to introduce incentive provisions at the plant.

In order to manage to sell the products by the end of the month and receive payment through the bank, it is necessary to produce them regularly beginning with the first days of the accounting period. It is always very questionable to place one's hopes in overtime work, shock work or other extraordinary measures. Everything can collapse because of some unexpected occurrence. Therefore a great deal of attention was devoted to the organization of rhythmic operation of all production subdivisions. A daily schedule was introduced, and in the finishing sections--an hourly schedule. The material incentives for the subdivisions were also made dependent on how rhythmic the work was. The fulfillment of the assignment for the products list in the first 10 days increases by bonus by 4 percent. Extremely significant sanctions have been established for violating the rhythm. Failure to fulfill the assignment for the products list in the first 10 days reduces the monthly bonus by 6 percent, and in the second 10 days--by 4 percent, even if all the other technical and economic indicators of the work at the shop are on the level required by the plan.

The methods of accounting for the prepared products that come into the sales warehouse are oriented toward mandatory control over the entire set products list. It is impossible to make up for an underfulfillment of the plan for certain items by producing more of others. Above-plan products are accounted for separately.

[Question] But still, probably, you have interruptions, do you not? What is done at the plant in such cases?

[Answer] Production is a complex and dynamic organism, and nobody is insured against unexpected occurrences. We experience them like anybody else. But the entire system of control of production and deliveries is directed toward revealing and preventing them promptly. A certain strategy and tactic have been developed.

Thus regulation of incomplete production is very important in maintaining the stability of production and sales. The monthly printouts that are issued by the plant computer center reflect fulfillment of the production assignments by the metallurgical shops. They indicate the absolute amount of the reserve from a given position as well as its level in comparison to the normative. The fact is that the absolute amount of the reserve does not always give one an idea of whether things are good or bad, whether the situation in production is calm or tense. But when the reserve is given in comparison with the calculated amount, this characterizes what needs to be known.

The level of the reserve at the plant is a variable amount, depending on the period of the year. As an analysis conducted by our specialists showed, on certain days during the summer there are more than 1,000 people absent from our plant. This is mainly because of vacations and participation in agricultural work. We do not try very hard to limit summer vacations. Let the people have their recreation when there is a lot of sun and possibilities of healthful activity. And during the winter months we have an average of no more than 400 people absent. But the plans for deliveries are almost the same for both the summer and the winter. How can this be? We had to develop a system of variable reserves, depending on the fluctuations in our labor resources. Like water in front of the dam at an electric power station, they will decrease or increase at various times of the year. The only difference is that the level of the water reservoir rises in the summer, while we create large reserves in the winter.

Another important standard for reserves which protects us from random interruptions is making sure that the prepared products in the warehouses correspond to the norm. Their level is regulated by the sales service. Vladimir Yakovlevich Kichin, a good organizer and a lawyer by education, is in charge of the sales service at the plant. He has placed the work of the service on a strictly legal basis and regulated its interrelations with the production subdivisions and the consumers of the products. While previously the role of the sales service amounted to organizing the dispatch of items that had been released to the warehouse, today the division regulates and controls production. Twice a month it holds conferences with the production division which are devoted to an analysis of the fulfillment of current

assignments. If the fulfillment of the plans for dispatch and the production assignments, with the existing reserves of prepared products, do not provide for filling the orders of the suppliers, the division has the right to make changes in the operational production plans.

[Question] Is this primacy of the consumer over the producer?

[Answer] Quite so. The primacy of the sales service, which represents the interests of the consumer. In our opinion, this is an indispensable condition for the fulfillment of delivery agreements. When, in 1973-1974, the plant was just beginning this work the production workers were cautious about expanding the rights of the sales service and about its new role. At that time the economic mechanism was not directed toward the fulfillment of contractual commitments. There arose serious psychological difficulties and friction among the shops and divisions and the sales service. But by the time the fulfillment of the delivery plan on the basis of agreements and orders became the main production indicator, we were better prepared for its introduction than others were.

[Question] To what extent is the plant developing direct long-term ties with its consumers? What has already been done and what are the prospects?

[Answer] Today we deliver 70 percent of our products through direct ties. Such a large volume of deliveries accounts for only 10 percent of the overall number of our clients, which includes such machine building giants as ZIL, GAZ and AZLK, the Kirovskiy zavod production association in Leningrad, Rostsel'mash and others. We have good contacts with them, which helps us to draw up our production plans correctly and to take their needs into account.

But still the reserves of long-term economic ties are far from exhausted. For we must deliver the remaining 30 percent of the products in extremely small batches since they go to 900 clients (out of 1,000). We are continuing to work to consolidate the file of orders although we are already quite tired of our lengthy correspondence with Soyuzavtosel'mash of the USSR Gossnab. This testing of our nerves has been going on for years. True, we have managed to achieve certain results: initially we had 700 more clients than we have now.

What will be accomplished by consolidating the orders and how can this be carried out? First and foremost it will be possible to observe the transit norms for dispatch and to facilitate the formation of routes for the transportation of products. In the end, one cannot but deal with the working conditions for rail transportation and those difficulties which it is experiencing! We have consistently and persistently returned to Soyuzavtosel'mash all orders in which the batches of products were smaller than the transit norms for dispatch, suggesting that they be returned to the Soyuzsel'khoztekhnika base. At these bases in the oblasts, krays and republics it would be expedient, in our opinion, to sort the products for the rayon Soyuzsel'khoztekhnika divisions, the repair shops and so forth. There the shipping distances are short and it is possible to use automotive transportation.

The next problem. Point 9 of the Provisions on Delivery of Products for Production and Technical Purposes says: "In the plan for assigning consumers the volume of deliveries of products is determined, as a rule, in a group products list (assortment) for the entire period of the assignment with a breakdown for the various years." In keeping with the Provisions, all other conditions for deliveries, including the developed assortment, delivery deadlines within the quarter, special requirements for quality and others, are determined in agreements concluded between the supplier and the consumer for a long period.

It seems that this point determines the main content of long-term economic ties. But in practice this is frequently not the case. Thus Soyuzglavavtosel'mash prescribes the list of items down to the smallest detail not only for the year, but also for the quarter, and thus it limits the possibilities for the partners to regulate their interactions.

For example, certain consumers have enough supplies of our products to last them for several years while others do not even have the normative amount. If the client and the supplier could determine for themselves the list of orders for the future, such distortions would not exist. And the demand of the clients would be satisfied more fully and material resources would be utilized more efficiently. For now, when we have such strictness and such rigid regulation, everyone tries to take all that he can get--but what if suddenly he cannot get anymore in the future? In our opinion, it is necessary to grant greater independence to the partners in direct economic ties.

As for our plant, we could deliver not 70 percent, but 90-95 percent of our products under direct agreements. This would make it possible not only to consolidate the transit batches, but also to form the file of orders more successfully and utilize production capacities more efficiently.

And, finally, one must not forget about such a possibility as wholesale trade. We deliver spare parts for passenger cars to retail trade. What is to keep us from organizing wholesale trade in our items through the Gossnab system or the administrations for material and technical supply of the soviets of people's deputies. This would improve the supply for small organizations.

[Question] How do you manage to maintain stability of deliveries when changing over to new items?

[Answer] Work on new technical equipment is indeed not a simple task. It can strongly influence the stability of production and deliveries if one does not prepare for it properly. For half of the plant's products are updated every 5 years.

In recent years, technical progress in automotive and tractor electrical equipment has involved an increase in the service life of technical equipment and a changeover to the use of electronic equipment with an orientation of the design of the instruments toward economizing on fuel and a reduction of the material-intensiveness of the items. Of the new kinds of products, the electronic economizer block is interesting. The use of a system with this block reduces the toxicity of exhaust fumes and reduces the expenditure of

fuel while the engine is idling. It is appropriate to mention the new electronic block for automated control for KAMAZ engines, which was created in conjunction with the NIIAvtopriborov [Scientific Research and Experimental Institute of Automobile Electrical Equipment, Carburetors and Instruments], the development of ZIL diesel trucks, and the new electronic voltage regulators.

Changes are being made in our main kinds of products. We have developed noncontact generators and spare parts for them to be used on the ZIL and UAZ trucks which are intended for difficult operating conditions. One of the generators has undergone receipt testing and the first batch for adjustment. We have developed a new electric engine for the cooling systems of modern cabs for the Don combines and certain kinds of tractors. New electric pumps have been introduced for the heaters of the LAZ bus and also for the ZIL, MAZ and KAMAZ trucks as well as certain others that are to be used in the North.

Our plans for the preparation of new items include not only intraplant work, but also the arrangement of ties with future supplies of batching items and materials. It is in the stage of the experimental batch of the products that we verify their readiness to cooperate with us and their reliability as partners in production.

Whenever we have assimilated a new electronic device one of our partners has always let us down. We have come to call such suppliers "unrealistic." We have been unable to find a new manufacturer, and then it was decided that we would make the batching items for the new electronic instrument ourselves. Of course, this has not always been the most efficient decision, but the plan for the production and delivery of the new item has been fulfilled.

The "unrealistic" supplier has then suddenly remembered. His representatives have come to our plant and suggested partnership. But by then we already have a reliable production section and we have refused the services that were offered.

I want to be understood correctly. I am not a proponent of "self-sufficient management." But I am against having the enterprise suffer from unreliable cooperation. We have mainly confident, businesslike relations with our suppliers. But we do not wish to have "unrealistic" partners among them. Therefore we consider the possibilities of cooperation carefully, as early as the stage of assimilation of new technical equipment.

[Question] At recent plenums of the CPSU Central Committee a great deal of attention has been devoted to strengthening delivery discipline. In the country various kinds of work are being done in this area. What, in your opinion, must be done to increase responsibility for fulfillment of contractual commitments?

[Answer] It seems to me that, among other important measures, it is necessary to further improve the methods of calculating and evaluating the results of the work under the indicator of sales, taking deliveries into account. Today the maximum percentage of delivery shortages for which sanctions and material incentives are established poorly reflects the damage caused to the national

economy. The indicator should be made more accessible for control and accounting. Moreover it acts separately from the other indicator which characterizes delivery work--the sum of fines for delivery shortages. The fines are reflected in the bookkeeping accounts. It is easy to verify this sum and so it is always reliable. The level of fines should be taken into account when determining the sum of material incentives.

I am saying this not because we have not paid any fines in the last 10 years as a result of our 100-percent fulfillment of contractual commitments. In this case, the situation interests me as the manager of a consumer enterprise. Sometimes one receives large sums of fines from a plant, but it is completely up to date in the reports concerning the fulfillment of the plan for deliveries. In such cases it is difficult to achieve efficiency from the suppliers.

[Question] Delivery discipline is one of the kinds of executive discipline. In order to maintain it, obviously, it is necessary to have a high level of discipline in all stages of the production process and in all areas of production and administration. What work is being done at the plant in this area?

[Answer] No, the level of delivery discipline cannot be considered separately from the levels of labor, technological, executive or other forms of discipline. At the enterprise we are constantly trying to raise them. In order for the results to be evident, it is necessary to evaluate correctly the labor of each individual. For workers who are employed directly in production there are clear criteria--the items, parts and components that are produced and the level of release of products at their first presentation. It is more complicated to evaluate the results of the labor of engineering and technical personnel and collectives of service subdivisions. In operation at the plant as part of the ASUP is the subsystem KID--control of executive discipline. It has made it possible to sharply increase the responsibility of engineering and technical personnel and employees. Executive control is provided with a computer with the help of reminder cards. The card is filled out when the assignment or instruction comes in. The information is sent to the computer center. One must say that previously people were not very worried if some particular point of the order was not met or provided on time. Now people come to me and ask for extensions: if you do not fulfill the order--on the basis of data from the KID your coefficient of work quality and level of material incentives are reduced.

[Question] Are you not afraid that the increased exactingness will accelerate labor turnover?

[Answer] In my opinion, people are more likely to want to leave if we do not evaluate their work according to principle--both the idler and the conscientious worker will be evaluated with the same criteria. When the requirements are increased the idlers leave, and there is no reason to complain about this. And it is important for those who are working conscientiously, with full return, to have their work evaluated correctly.

Today our enterprise is fully staffed with personnel, the number is stable, it and it is not decreasing. We value this since, what with the shortage of labor resources, not all enterprises manage to retain the number they need. Many social measures are being carried out at the plant in order to stabilize and strengthen the collective.

Today the person who comes to the plant is interested not only in earnings, although they are no less here than at neighboring enterprises. When a young worker comes to the personnel division he asks whether we have overtime work or work on days off. The personnel workers give the same answer to both of these questions -- "no and no." The people who come here are frequently interested in whether or not we are building residential buildings, and whether we have pioneer camps, kindergartens and recreation bases. They receive affirmative answers to these questions. We are working in a planned way on the social development of the collective. Attention to the human factor is one of the most important conditions for the production and economic activity of the collective.

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ATE-1 SALES SERVICE CHIEF DISCUSSES WORK

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 17-24

[Article by V. Ya. Kichin, chief of the sales division of the ATE-1 plant: "The Plant Sales Service." Passages rendered in all caps printed in boldface]

[Text] There exists the opinion, which I think is mistaken, that sales is only the final stage of production and economic activity. And the work of the enterprise does not depend much on it. But this is far from the case. Yes, selling is the final stage, but it is also the beginning of everything. FOR THE LOADING OF PRODUCTION CAPACITIES AND THE OPERATION OF THE ENTIRE ENTERPRISE DEPEND ON CORRECT FORMATION OF THE FILE OF ORDERS AND ON THE ORGANIZATION OF THE FULFILLMENT OF CONTRACTUAL COMMITMENTS. UNDER CONDITIONS OF THE ORIENTATION TOWARD THE CONSUMER, IT IS NECESSARY TO REVISE THE ROLE AND FUNCTIONS OF THE SALES SERVICE.

Previously at our plant, the circle of clients was determined by the contracting group of the production and dispatcher service which supervises the filling of orders. It was only formally responsible since nothing depended on it except the filling out of documents for the dispatch of products.

The work that has been underway since 1974 to restructure the plant's subdivisions in order to fill all orders on time led to radical reorganization of the sales service. It was decided to concentrate a wide-ranging complex of problems here, from forming the file of orders to ensuring the delivery of the products to the consumer. The following functions were transferred from the planning-economics and production-dispatcher divisions to the sales division: the formation of the plan for deliveries, the coordination of this with supplies and orders, coordination with planning and supply agencies and clients (USSR Gossnab, Gosplan, Minavtoprom [Ministry of the Automotive Industry], Ministry of Trade, State Soyuzsel'-khoztekhnika committee and so forth), and the documentation of orders and invoices for export deliveries and so forth (the plant exports products to 20 countries). Previously the division received only prepared specifications and schedule orders for execution.

This restructuring began when A. I. Borzunov was director of the plant (he is now the USSR deputy minister of the automotive industry). He called me in and said: "We are going to arrange our work not in terms of production volumes, but in terms of the fulfillment of the plan for deliveries and sales. I am waiting for ideas and suggestions." I must say that a certain amount had already been done by then. For example, daily and 10-day production schedules had been introduced, as a result of which the work rhythm and the uniformity of the arrival of products at the sales warehouse improved. The shortage of products delivered under contractual commitments decreased. But these shortages still existed and fines had to be paid to the consumer enterprises.

What was wrong? How did the shortages come about? We decided to conduct an investigation of all stages of the production and sales chain. We received a great deal of assistance in this from the Moscow Institute of the National Economy imeni G. V. Plekhanov. During the course of the investigation it became clear that 90 percent of the cause of the tardy filling of orders lay with the enterprise: 30 percent of the shortages of deliveries were because of legal incompetence, 25 percent -- because undocumented orders were accepted, 27 percent -- because of a lack of reciprocal ties between production and sales, and 8 percent -- the fault of the sales service itself. And only 10 percent of the failures in deliveries resulted from external factors -- transportation and interruptions of material and technical supply.

In order to increase the competence of the sales service and contractual-legal and complaint work, specialists who handle such problems have been transferred to its staff. This organizational decision has turned out to be very useful since previously the legal experts were actually isolated from the business itself. Of course it took time for then to catch up with events. But now the legal experts exert a direct influence on the formation of contractual commitments, they consult and they give on-the-spot assistance to workers of other bureaus and groups when problems arise for them. And there are many of them. For the sales service enters into external ties and represents the enterprise in relations with the clients more than other services do. Here knowledge of business law is an indispensable condition for their work. We have organized training in legal matters.

BUT THE MOST IMPORTANT THING FOR THE FULFILLMENT OF THE PLAN FOR DELIVERIES IS COMPLETE COORDINATION OF PRODUCTION AND SALES. In order to avoid the appearance of a situation in which the shops fulfill the plan, but the sales cannot satisfy all the clients, A NEW POLICY FOR PLANNING PRODUCTION AND SALES HAS BEEN INTRODUCED AT THE PLANT. Before the 20th of each month, the production and dispatcher division submits to the sales division a draft of the production plan for the next month with a detailed list of products. The sales personnel, when they look over their program for the next month, find out exactly if for the entire list they have orders from Minavtoprom, Soyuzglav-avtoprom, Gossnab, the export organizations and so forth. This is a necessary refinement for delay of the schedules and orders can lead to a situation where undistributed products accumulate at the plant and above-normative supplies are formed.

It is also necessary to ensure uniformity of the shipment of items, a sufficient quantity of containers and cars, and efficient shipment routes. Sometimes the clients ask to have the delivery times changed. It is necessary to look for possibilities of granting these requests.

Why do divergences appear between the production plan and the delivery plan? The monthly production assignment is one-twelfth of the annual production program. But the delivery plan is formed from applications and schedule orders from many consumer plants which have their own conditions and production schedules. Accounting for and summing up the demands for each kind of product produce various deviations from the uniform program. OUR EXPERIENCE HAS SHOWN THAT THIS LACK OF CORRESPONDENCE COULD BE ELIMINATED WITHOUT HARM TO PRODUCTION IF THE MONTHLY PLANNING WERE MORE FLEXIBLE AND WERE REGULATED BY THE PRODUCTION AND DISPATCHER DIVISION IN CONJUNCTION WITH THE SALES DIVISION AND OTHER PLANT SERVICES.

On the basis of the refined monthly production program, the shops are given schedules for the release of products to the warehouse. In order to coordinate the actions of the plant services, copies of the schedule are given to the chief of the production and dispatcher division, the head bookkeeper, and the chiefs of the divisions for external cooperation and technical control. The production-dispatcher and sales divisions strictly keep track of the meeting of schedules. This is also taken into account when material incentives are awarded to the shop for the month's work. Violations of the schedule for production and deliveries during the first and second 10-day periods lead to a reduction of the amount of the bonus for the month.

Previously all the products manufactured in the shops where shipped to the sales warehouses and the sales division accepted them without complaint. Now we keep close track to make sure that the products that are released correspond to the planned list. Initially the shops complained about us: "The sales division does not understand what enthusiasm and socialist competition are." We replied: "Go ahead and produce above-plan products, but not in exchange for the regular products you have failed to produce, but in addition to the products on the planned list. Substitutes do not count." We were supported by the administration and the party committee. There was only one case, during the second year when Anatoliy Ivanovich Pydrin was director, when he gave me an order to accept one item from a shop as a substitute for another. I asked for written confirmation. By morning, after he had had a chance to think things over well, the director rescinded the order. Now the shops do not make such requests. They know that first they have to take care of all the items included in the plan, and after that they can overfulfill it.

By the end of the first 10 days we hold a meeting of production and sales. The purpose of this meeting is to analyze the actual situation and make operational decisions. And if, after drawing up the plan, we were to wait complacently until the end of the month for its fulfillment, there would inevitably be interruptions since there are too many factors that affect production. By the 10th of the month we already have all the statistical reports for the preceding month, and we know the level of incomplete production, the supplies in the sales warehouses and so forth.

Having clarified the possibilties of sales as a whole, the sales division along with the production division considers each part of the products list. Let us assume that the production plan for G-250G1 generators is 12,570 and there are still 44 of them which are ready in the warehouse. The plant must also deliver 13,117 of them as batching items under on orders and contracts and 950 in the form of spare parts. That is, the plan for deliveries must exceed the production plan.

In this situation there are two alternative decisions. The first is to add to the following month the number of generators that are short. But in this case, even if the sales division promptly warns the client, his production conditions could become difficult because of the interruption in deliveries. The second alternative is to make a recommendation to the manufacturing shop, on the basis of the needs for deliveries, to increase the production of these generators and reduce the production of others for which there are fewer orders than are envisioned in the production plan. This is the solution that was adopted. The procedure for coordinating the plan appears as follows.

Table. Coordination of Monthly Production Plan With Delivery Plan

Name of product	Production plan	Residual at beginning of month	To be delivered during month, including		Proposals	
			Batching items	Spare parts	Increase (+)	Decrease (-)
G12P Generator	1,400	--	915	523	+38	
ST13093 Starter	33,100	1,585	17,300	15,010		-2375

As is the case everywhere, the transportation group takes up a large part of the division's work. We have introduced daily accounting of the universal containers we receive from the railroad (for shipping batches of cargo of 3-5 tons), 20-ton containers and railroad cars. To this day I have notebooks in which I have recorded the daily shipment of prepared products in containers during the course of 10 years. It is most convenient to ship our products in universal containers. The railroad frequently tries to substitute 20-ton containers or ordinary cars for these. It fulfills its plan for providing means of transportation this way, but we have immense difficulties in shipping small batches. When we began to have conflicts with the railroads, they did everything they could to "put us in our place." We did not complain since we understood that we could hardly expect any other reaction. This forced us to work more efficiently. This is why we had to start keeping a detailed account of the dispatches.

A good deal has been done for mechanization of transportation and warehousing operations. The expansion of the warehouse areas and mechanization of the work are continuing. Incidently, we reached a point where at one time the sales division staff included a group of designers who dealt with this. But

then the financial agencies raised a ruckus. They said that it was not intended for this division to have designers. It was necessary to refrain from this innovation although even today such a group is simply necessary in the sales division. As long as it was a part of the division the mechanization of transportation and warehouse work proceeded rapidly. Now this work is done on a general basis, after the assignments for basic production are completed. It is difficult to change the psychology: for many, sales and transportation are still auxiliary services.

IT IS DIFFICULT TO IMAGINE HOW IT WOULD BE POSSIBLE TO REARRANGE THINGS WITHOUT THE HELP OF THE COMPUTER CENTER. It helped us to mechanize many accounting operations. The product and transportation bills of lading are now filled out on electronic accounting and invoicing machines. The daily accounting for the fulfillment of the plan has been mechanized: deliveries of spare parts and items through cooperation and goods for cultural and domestic purposes; the release of products in keeping with the products list; the sale of products in monetary terms.

You will not see "pushers" at our plant. We ourselves are concerned about the promptness of deliveries. If we see that there is some kind of interruption in shipment anyway, we take the necessary measures. Sometimes we have to send small batches of products as parcels. Sometimes at the end of the month, there are trucks on duty at the plant which are all ready to go -- they ship the items to the nearby consumers. But for the clients all this is left "up to personnel." The receive the products on time. The clients consult with us and share their problems and difficulties. We could help them more if it were possible to maneuver resources.

Let us assume that this month one consumer requests more products, while another has stored up a stockpile of our products. One could help the one without harm and then give more to the other one the next month. But even if it is considered that we send 70 percent of our products to the consumers under agreements for direct long-term ties, in fact Gossnab tries to assign everything for us, right down to the smallest item. It is necessary to grant more independence to the supplier and the consumer who have concluded direct agreements.

The sales division is working on accounts within the business. We have our own books and our own plan for labor. Material incentives have been made directly dependent on the results of deliveries.

DURING THE COURSE OF THE WORK THE FOLLOWING ORGANIZATIONAL STRUCTURE HAS TAKEN FORM: THE SECTOR FOR ORDERS AND CONTROL OF PRODUCTION, THE CONTRACT AND COMPLAINT SECTOR, THE PLANNING AND ECONOMIC SECTOR, ACCOUNTING AND REPORTING, WAREHOUSING, AND THE TRANSPORTATION SECTOR WHICH HAS A CENTRALIZED BRIGADE OF LOADERS.

In our opinion, the sales division should include design and technological groups for comprehensive mechanization of transportation and warehouse processes and a group for advertising--the problem of sales, especially of consumer goods, is becoming more and more crucial and it is necessary to study demand in a regular and planned way as well as to advertise the products.

With the increased responsibility for the fulfillment of deliveries, sales divisions have already accumulated interesting experience at many enterprises. It must be generalized. It is necessary to restructure the training of specialists for these divisions, taking into account the new requirements that are placed on them and the expansion of their functions.

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COOPERATION WITH SUPPLIERS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 22-23

[Article by V. A. Shvebig, deputy chief of the administration for spare parts for automotive and tractor equipment of the Soyuz-sel'khoztekhnika state committee (Moscow): "It is Easy for Us to Work with These Suppliers"]

[Text] The Moscow plant for automotive and tractor electrical equipment delivers a large part of its products through internal cooperation to enterprises of its branch--Minavtoprom--for completing the sets of parts for trucks. As we know, intrabranch cooperation is arranged fairly well for the most part. But it is also easy for us, external consumers, to work with this supplier.

Soyuz-sel'khoztekhnika receives from the ATE-1 plant 80 percent of its products which are distributed through Soyuzglav-avtosel'mash of the USSR Gosplan, worth a sum of 17 million rubles. These include starters, generators, relay-regulators and switches for trucks, tractors and combines. Of the 40 plants with which we cooperate, ATE-1 is distinguished by its sense of responsibility and attentive attitude toward the needs of the consumers. How is this manifested? The plant does not limit itself to establishing supplies and orders, but even in the stage of the formation of the annual production plan it establishes contact with the clients and coordinates delivery schedules that are convenient for them. During the past 5 years we have not had a single situation of conflict.

Suppliers frequently operate in terms of "normative demand" and "full demand," which characterize the level of satisfaction of the demand for one product or another. If in some cases we have to be satisfied with deliveries at the level of the normative demand, the ATE-1 plant is prepared to fill orders at full demand. Punctuality of deliveries has increased especially since, working jointly with the plant, we consolidated the batches of products to be shipped. We distribute the funds for automotive and tractor electrical equipment among the various republics, and in the RSFSR, Kazakhstan and Uzbekistan--among the oblasts. Previously, when they were distributed among the various rayons, the enterprise had a boundless sea of small consumers. It was difficult to form the delivery routes and to use means of transportation. It was also difficult for us, in turn, to control the course of deliveries.

With the consolidation of the suppliers, both sides obtained a mass of advantages. The deliveries became more regular. It was not difficult for the plant to send products to the republic or oblast Soyuzsel'khoztekhnika base. From here it was always possible to deliver spare parts to the rayon automotive transportation divisions.

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COMPETITION EXTENDS BEYOND INDIVIDUAL MANAGEMENT UNITS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 24-30

[Article by K. V. Lyanguzov, senior engineer of the division of labor and wages: "Competition of All-Encompassing Technological Chains." Passages in all caps printed in boldface.]

[Text] Under the conditions of specialization and concentration of production, each technological operation becomes more significant, and at the same time, so does their dependence on one another. The achievement of synchronicity in all of the interconnected jobs is becoming a most important condition for stability in production.

At our plant, socialist competition of all-encompassing technological chains helps to combine the efforts of all workers employed in the manufacture of a particular item. This makes it possible to surmount the barriers of specialized sections, shops and services, and they all begin to work in parallel on the achievement of the final result--the output of the item with minimal expenditures and in minimal time periods.

Competition of technological chains has been developing at our plant since 1976. The 20 chains that have been created encompass 90 percent of the workers at the enterprise, 16 of them being in the main production and 4 in instrument production.

When determining the organizational conditions for this competition, the system of indicators and the methods for material incentives we studied the experience of many enterprises of the country. Thus from the Kompressor plant we adopted the system of indicators of the competition, the ZIL--the methods of engineering support for it, and so forth.

THE FIRST QUESTION WHICH ARISES WHEN CREATING AN ALL-ENCOMPASSING TECHNOLOGICAL CHAIN IS THIS -- WHO SHOULD BE IN CHARGE OF IT? IN OUR OPINION, IT IS MOST CORRECT TO ENTRUST THE LEADERSHIP OF IT TO THE SENIOR FOREMAN OF THE FINAL OR FINISHING TEAM IN PRODUCTION, THAT IS, THE ASSEMBLY SHOP WHICH RELEASES THE FINAL PRODUCT. And it should rely on the council for the chain which is made up of the managers of all sections and shops engaged in the manufacture of this particular product.

The council for the chain meets every 10 days. It analyzes the collective's activity during the 10-day period; reveals the mutual complaints among the links; makes decisions to help one link or another if such a need arises; and brings up for the consideration of the plant's shops, divisions and managers those problems which go beyond its competence.

Thus the technological chain for the production of a direct current generator (it is headed by the senior foreman of the finishing section of shop No 11) includes 204 people; 30 people from shop No 10, 6--from the wire shop, 72--from press shop No 1, 68--from the fourth mechanics shop, 9--from the plastics shop, 19--from the galvanization section; and 28 controllers from the division of technical control.

The system of indicators for summing up the results of the competition is simple and brief They take four indicators which characterize the activity of the chain in achieving the final result:

P_1--production volume, P_2--rhythmic work, P_3--product quality and P_4--assortment (products list). Usually there are several dozen indicators like these, including the basic ones, those which are taken into account, those which are semiformal, and those which do not lend themselves well to quantitative evaluation. By refraining from them we managed to escape formalism and increased the objectivity when summing up the results. Now there are almost no disputed situations, which frequently occur when other forms are used for summing up the results of the competition.

Table 1. Printout of Course of Production in Technological Chain for Starter

Working days passed--16 Working days remaining--6

Part	Reserve		Plan for Month	Release for day		Release since beginning of month		Provision in days		Operational deficit	Lack of supply
	Plan	Act	1,000	Plan	Act	Plan	Act	Plan	Act		
Shop No 1											
Rotor plate ST-22-212		6	451.0	18,052		342,682	367,500	16	17.4		
Body ST4-101		3	9.0	368	546	6,788	5,356	16	12.1	-1,432	-3.8
Washer MKh-0942	12	25									
Belt ST22-102	5	7	30.3	1,473	2400	23,568	24,890	16	16.9		
Brush holder ST22-303	10	22					28,000				
Protective belt ST22-042		2	9.0	360		6,788	9,200	16	22.6		
Lever plate of ST4-030 starter	12	25					6,430				

Part	Reserve		Plan for Month	Release for day		Release since beginning of month		Provision in days		Operational deficit	Lack of supply
	Plan	Act	1,000	Plan	Act	Plan	Act	Plan	Act		
Shop No 2											
Collector ST22-2206	7	10	9.0	384	570	6,535	3,485	16	8.1	-1,898	-4.8
Insulation ST22-256		15	8.5	384		6,144	9,250	16	24.1		
Washer MKh 180		15	39.5	1,791		28,656	43,590	16	24.3		
Insulation ST4A-103		15	43.1	1,959		31,344	78,660	16	40.2		

*The information is similar for the other shops

The fulfillment of commitments in all-encompassing socialist competition of collectives of sections, brigades and shops that are included in the technological chain is monitored in the following way:

DAILY--in the links, by the participants in the competition themselves on the basis of printouts received from the computer center From them one can see the results of the work of each link for the preceding day and the running total for the month;

EVERY 10 DAYS--by representatives of the links included in the technological chains, at operations meetings of the council for the chain. The chairman is the manager who is the senior foreman of the finishing link;

MONTHLY--by the trade union plant committee in conjunction with the plant administration during the time before the 10th of the following month.

The calculation data for summing up the results for the plant are prepared by economists and norm setters of the shops, and the correctness of the calculations is verified by the planning and economics division and the division of labor and wages.

The results of the fulfillment of commitments for the shift, the day, the 10-day period and the month are posted in the shops and in the plant administration on bulletin boards for indicators and information is given to the collective through other information channels (the plant radio, the factory newspaper, conferences and so forth).

Technological chains are divided into two categories. The first includes those in which the assembly operations are performed on conveyors with an hourly schedule. The rest of the chains are included in the second category. Chains of both categories are subdivided into six groups, for each of which a certain amount of remuneration is established for the results of the competition. All or part of the bonuses are taken away from those links of

the prize-winning chain which have not provided for regular delivery of parts to the next link in the chain.

The shop personnel--handymen for current repair of equipment, electricians, workers in the dispatcher service, technologists, economists, norm setters, shop foremen and workers in the division for technical control--are awarded bonuses depending on the personal contribution of each member of the chain which has won a prize-winning position. The sum allotted for bonuses for these workers should not exceed 30 percent of the overall sum of the bonus.

Engineering and technical personnel make an appreciable contribution to the development and improvement of all-encompassing competition of associated workers. Working on accelerating the introduction of advanced technology and new technical equipment, they cooperate successfully both with the collectives of technological chains and with scientific research organizations.

In the first stage, the work of the engineering collectives was not reflected in the results of the competition of technological chains and the provisions concerning incentives from the bonus fund did not extend to them. This reduced the effectiveness of the competition.

The instrument workers were the first to include engineering and technical personnel in the technological chains, and as the principles for cooperation were worked out, engineers and technicians were included in the chains of the main production.

The effectiveness of the participation of engineering and technical personnel in the all-encompassing competition of associated workers is determined by the results achieved by the finishing sections of the chains, that is, the final results. It is reflected in the development and introduction of organizational and technical measures which would make it possible for the collective of the chain to increase labor productivity, reduce production costs, improve product quality and raise the art of production to a new level.

Organizationally, this has the following appearance. A comprehensive brigade of engineering and technical personnel is formed from specialists of various technical divisions. It becomes a link in the technological chain. One of the most qualified specialists is appointed as its leader, with the agreement of the divisions and the trade union committee.

The monthly assignments for the comprehensive brigades of engineering and technical personnel (there are 20 of them--the number of technological chains) are documented on forms which are signed, on the one hand, by the shop chiefs, economists and managers of the chains, and, on the other, by the division chiefs and leaders of teams of engineering and technical personnel. And the report concerning fulfillment of the assignments is approved by the shop chiefs with the participation of chairmen of the councils of the chains and economists, and they are sent to the division of labor and wages. It is the document which is used when considering the results of the competition and distibuting the bonuses. The collective of the engineering link is deprived of its bonus or receives a smaller amount if the plan for the earmarked organizational and technical measures has not been fulfilled.

Other divisions of the management staff also participate in the all-encompassing competition of associated workers. Thus divisions for outside cooperation (OVK) and material and technical supply (OMTS) have an extremely significant influence. The rhythmic and continuous work of all technological chains depends largely on prompt delivery of materials and batching items. Each month the councils of the chains sum up the results of the competition, submitting the information concerning the work of their divisions to the division for labor and wages. If during the report period there were no complaints concerning deliveries of materials and batching items the OVK and the OMTS receive the full amounts of their bonuses. But if there have been complaints about delivery shortages from individual chains, the question of the amount by which the bonus is to be reduced is decided individually for each concrete case.

THE GOALS AND PURPOSES OF THE ORGANIZATION OF ALL-ENCOMPASSING COMPETITION OF TECHNOLOGICAL CHAINS AND ASSOCIATED ENTERPRISES ARE ESSENTIALLY ONE AND THE SAME -- THE FINAL RESULT AND THE FILLING OF THE CONSUMERS'S ORDERS. THEREFORE ONE CAN CONSIDER INTRAPLANT COMPETITION OF TECHNOLOGICAL CHAINS TO BE A PART OF THE COMPETITION OF ASSOCIATED ENTERPRISES. Our plant is involved with hundreds of suppliers of batching items and materials and 1,000 consumer enterprises. The effectiveness of the competition depends on the efficient operation of the chain of supplier associates--the manufacturer (ATE-1 plant)--the consumer (automotive plants, agricultural machine building enterprises, Soyuzsel'khoztekhnika organizations and so forth). For regardless of how well intraplant competition may be organized, its results depend largely on the efficiency and rhythm of deliveries by associated enterprises. Therefore we are devoting a great deal of attention to the development of competition with associates.

About 4-5 years ago, the Podolsk Mikroprovod plant was late in delivering some fine wire and was producing poor-quality products. During the years of the cooperation the situation changed sharply. Having made commitments, the workers of the plant are carrying them out to the letter and they never let us down. During 1983 there was not a single case of irregular delivery. Because of the competition good production ties have been established with other associates as well--the Moskabel' plant, the Mtsensk aluminum casting plant and others.

But there are significant shortcomings in the organization of the competition of associated enterprises, the main one of which is the lack of a unified system for summing up the results of the competition and criteria for evaluating the achievements. This is brought about by the separation of the branches. And it also makes it impossible to create a unified incentive fund. Since competition of associates is an important instrument for improving interrelations between suppliers and consumers and for filling contractual commitments, the AUCCTU and the USSR State Committee for Labor and Social Problems should devote special attention to it.

Work on improving technological chains leads to one more important conclusion. It is quite possible that there is some point in planning production in terms of technological chains. This will make it possible to overcome the separation of the shops and to control material and human resources more efficiently. The ASU division is now developing such an automated subsystem.

Table 2. ATE-1. Growth of Volume of Commercial Output and Labor Productivity, Percent of 1970.

	1975	1980	1985 (plan)
Commodity output	169.1	237.9	292.7
Labor productivity	166.1	233.6	284.4

ATE-1. Rhythm of Output of Commercial Products, Percent of Volume for Month.

	1st 10 days	2nd 10 days	3rd 10 days
1981	29.4	32.4	38.2
1982	32.4	32.7	34.9
1983	32.2	32.8	35.0

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CALENDAR NORMATIVES USED IN PLANNING

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 31-37

[Article by V. A. Khikhetkin, production chief, and V. M. Yaroslavtsev, chief of ASU division: "Production Management Based on Calendar Planning Normatives." Passages rendered in all caps printed in boldface]

[Text] It is impossible to achieve 100-percent fulfillment of contractual commitments for deliveries without efficient work of production subdivisions. In order to achieve stability and regularity of production at the plant, we are improving planning, improving control and accounting for the work of each section, shop and the plant as a whole, and developing a system of management on the basis of the automated control system.

CALENDAR PLANNING NORMATIVES HAVE PLAYED A LARGE ROLE IN RAISING THE LEVEL OF PLANNING AND MANAGEMENT OF PRODUCTION. Plant specialists were given assistance by scholars of the Moscow Institute of the National Economy imeni G. V. Plekhanov in developing them. The normatives determined the sizes of batches of parts that are produced for processing, and manufactured with the same equipment setting; production cycles for their manufacture; the calculated reserve of blanks, semimanufactured products, and prepared parts and components which are necessary for the rate of production envisioned by the schedule.

What did we manage to achieve as a result of the utilization of calendar planning normatives? Above all, we reduced the list of items that were in production at the same time, and this is extremely important under the conditions of our plant, which has all types of production--from individual and small series to series and mass production--and produces a large array of products. For instance, the press shop has been assigned the manufacture of 564 parts, but actually its monthly assignment is for 400-420 parts. Because the equipment has to be adjusted fewer times, its utilization is improved and labor productivity increases. As a result of this, more favorable conditions for fulfillment of the plan for the products list are created in the shop and sections. The work is planned this way for other metallurgical shops as well.

THE MANUFACTURE OF PARTS IN BATCHES OF OPTIMAL SIZE LEADS TO UNIFORM PROVISION OF EVERYTHING THAT IS NECESSARY FOR ASSEMBLY PRODUCTION. We have almost no positions with short supply left. In rare cases there arises a need for extra manufacture of some particular parts that are holding up assembly. Because of this, control and management of production as a whole are simplified.

The most labor-intensive part of the work for determining calendar planning normatives is the calculation of the amount of the reserve of incomplete production. At our plant, where there are all types of production, this is an especially labor-intensive task. Again, we were assisted in solving this problem, too, by the scholars of the Moscow Institute of the National Economy imeni V. G. Plekhanov. Together with them we developed a system for determining the normatives of incomplete production for all parts manufactured within the plant.

This work was first done in 1973-1974. But when we began to create batching reserves on the basis of the calculations that had been made, it became clear that not all of the production subdivisions have the conditions for this. In order to bring the reserves up to the calculated level, we developed a plan of organizational and technical measures which was directed toward widening the "bottlenecks" and increasing labor productivity. With time, naturally, the list of items and the structure of production changed. Because of this, in 1981 we again recalculated the normatives for incomplete production in keeping with the present day.

THE EXISTENCE OF A BATCHING RESERVE IS A MOST IMPORTANT CONDITION FOR THE STABILITY OF PRODUCTION. It makes it possible to make adjustments more freely in the product list plans of the metallurgical shops, depending on the circumstances that arise--the lack of materials or a particular number of workers during the period of summer vacations and agricultural work, unplanned halting of technological equipment, and so forth. The reserve makes it possible, at the request of the sales division, to rearrange the monthly list of items to be produced when there is a change in market conditions. Thus it insures us against all random and unexpected occurrences, and it lends greater flexibility to the management of production and deliveries.

Understandably, the creation of a batching reserve for incomplete production is not a matter of one month or one year. We check attentively and regularly on its preservation and augmentation. A system of accounting and control developed by the production division and the computer center is directed toward this. It is based on issuing information every 10 days and every month concerning the condition of incomplete production. The information goes to all managers concerned, beginning with the shop foreman and ending with the plant director. It is adapted for each of them, depending on the group of tasks that are carried out.

We attach especially great significance to the 10-day control. Because of it, when the reserve deviates from the calculated amount it is possible to take measures on the spot. The control is maintained with the following form:

Table. Calculation of Incomplete Production (NZP) for 10-Day Period

Normative of NZP in Parts of Daily Sets		Production Requirement	Residuals of NZP	
Minimum	Calculated		Calculated	Actual

The year 1979 turned out to be a turning point for the plant with respect to automation of management. And it was not only and not so much a matter of the formation of the ASUP division with a computer center. The main thing was that there was a radical change in the attitude toward the ASU on the part of management and the majority of workers of the plant. Everyone understood that each year it would be more difficult and more and more stress would be involved in the organization and management of production under the conditions of manual processing of administrative information. Moreover, the volumes of it are constantly increasing as the regulation of the process of manufacture and sale of products improves. Frequently, the situation reminded one of a tightly drawn string: it was difficult to make a decision without a sufficient level of information. The utilization of computer equipment in management has become a most critical necessity, and this has been recognized by everybody. But people have been put on their guard by cases of ineffective ASU's and their own negative experience (the attempt to cooperate with the Ulyanov Planning and Design Bureau for ASU of the USSR Minpribor [Ministry of Instrument Making, Automation Equipment and Control Systems] turned out to be unsuccessful). Therefore, after examining the situation critically, we selected what was from our point of view the most rational path to the development and introduction of an ASU.

FIRST, we decided to conduct most of the developments through our own efforts, without turning the planning organizations for assistance. SECOND, taking into account the fact that the quality of control systems is determined essentially by the properties of the "feedback," we basically developed subsystems which play this role, namely:

the subsystem for operational control of the main production which, in addition to planning, checks on the fulfillment of planned assignments by the subdivisions and gives information for making decisions concerning operational influence on production;

the subsystem for automated control over the implementation of directive documents (KID). With its help it is possible to follow the paths of all kinds of orders, instructions, letters, schedules, organizational and technical plans and future developments, and also to supervise complaint work, technical preparation for the production of new items, technological discipline, and so forth.

The subsystem for operational control of basic production consists of four comprehensive tasks:

planning, accounting and control over the output of commercial products;

planning, accounting and control over the provision of the assembly production with parts and components that are manufactured within the plant;

the "Production" complex;

control over the fulfillment of planning technical and economic indicators in the various subdivisions and the plant as a whole.

The first comprehensive task is fairly traditional and there is no need to discuss it in greater detail. But I should like to comment on the second. The technology for carrying out this task envisions that in each stage of calculations, any figure in the printout (there are 6 of them in this complex) can be adjusted by workers of the shop or production-dispatcher subdivision who have the appropriate authority, and can be used in the next stage in the adjusted form. This makes it possible to react operationally to any deviations from the normal condition of the production process.

Two tasks of this complex are intended directly for participants in the production process and make it possible to actively enlist workers in production management: 1) calculation of the provision of the technological chains that produce individual items with parts and components; 2) planning and accounting for the cost accounting (khozraschet) activity of the brigades.

At the beginning of every working day, each manager of a technological chain (as a rule, the foreman or brigade leader of the finishing section) is given a printout with exhaustive information about the existence of batching parts and components at the "entry" of the assembly conveyor and about the chain of products for the preceding days.

Attention should be given to the complex of tasks entitled "Production," which takes advantage of the main planning decisions of the "Sigma" ASU.[1] We became familiar with it at the ATE plant in Rubtsovsk in Altay Kray. This complex carries out daily accounting of the products manufactured in the shops and the labor and wages expended on them, and also the planning for the shop and the various sections, analysis of the work of the shops, calculations of the normative of the reserve of incomplete production, and so forth. This complex also produces a calculation of piece-rate wages in terms of the results of the labor, analyzes the fulfillment of the output norms and personal production plans, and calculates bonuses from the wage and material incentive funds.

The next complex--"Control of the Fulfillment of Planning Technical and Economic Indicators for the Subdivisions and the Plant as a Whole"--adjoins from above the complex "Planning, Accounting and Control of the Output of Commercial Products." Here one keeps track in terms of wholesale prices and NChP [normative net output], while in the complex "Planning ..." it is in physical indicators for the entire detailed list of items.

Clear-cut control over execution is a most important condition for the effectiveness of a management system. This is precisely why we attach such importance to the development of the automated subsystem KID (control of implementation of directive documentation). It makes it possible at the end of the report period (usually a month) or on demand to obtain report or

analytical information about the implementation of directive documents which are being monitored.

The effectiveness of the KID subsystem can be characterized by the following figures: during the first month of its introduction, 11 percent of the assignments from directive documents that were submitted for monitoring were implemented completely and on time, in the second month--68 percent, in the third month--75 percent, and now this indicator is remaining stable at 90 percent. Practically every case of failure to fulfill an assignment, if it has not been adjusted by a documented extension of the deadline, becomes the object of discussion by the balance commission and, as a rule, ends with a reduction of the bonuses of the management staff workers who are at fault.

One of the most promising directions for improving the ASU of production is the use of computers in dialogue. To do this, telecommunications have been provided in the plant services and production subdivisions, and display terminals are being installed. The output information from the complex of tasks entitled "Control of the Fulfillment of Planning Technical and Economic Indicators" and the KID subsystem can be transmitted to the display screens even now, at the request of the ASU users. There is no longer any need for punch cards or printouts, and the input or output of information and preparation and adjustment of programs are accelerated since these can be done with the help of the display terminal.

ONE OTHER PRINCIPLE FOR THE DEVELOPMENT AND UTILIZATION OF THE ASU WHICH WE TRY TO USE AS A GUIDE IS TO MAKE SURE THAT THE PRESENTATION OF INFORMATION IS ADEQUATE TO THE LEVEL OF MANAGEMENT. Each level receives all the information it needs and nothing more. The technological chains, brigades and shops receive from the subsystem for operational control of production data about the fulfillment of assignments and the developed products lists in their own subdivisions and in the supply shops; the production and dispatcher division--about the course of production in the metallurgical and assembly shops; the sales division--about the fulfillment of the plan in terms of the products list; and the plant management receives generalized data concerning the shops, sections, consolidated groups of products on the products list, normative wages and normative net output (of course, the manager can request and obtain any other information on demand, but he receives the aforementioned information regularly, as a matter of policy). Each of the other management services also receives its information.

The work on improving production control and the ASUP is continuing.

FOOTNOTE

1. Concerning the ASU "Sigma" see EKO, No 5, 1979 (ed.).

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PROMPTNESS IN FILLING ORDERS STRESSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 37-42

[Article by A. M. Belyakov, candidate of economic sciences, deputy chief of economics administration of USSR Gossnab (Moscow): "All Orders -- On Time." Passages rendered in all caps printed in boldface]

[Text] Recently there have been considerably more enterprises and associations which have been operating stably and efficiently meeting contractual commitments for deliveries. Among them are the Moscow Plant for Automotive and Tractor Electrical Equipment--ATE-1, the Krasnyy proletariy Machine Tool Building Association imeni M. V. Frunze, the Kostroma excavator plant Rabochiy metallist, the Tselinogradsel'mash plant, and others.

Having become familiar with the organization of this work at the ATE-1 plant, I was convinced that a good deal could be done if one set as a production goal the fulfillment of all orders on time. Then it would also be possible to overcome some of the imperfections in the system of product distribution according to orders, transportation problems, difficulties in material and technical supply and other factors which undoubtedly exist and which are mentioned especially frequently when trying to rationalize violations of contractual commitments.

THE ORIENTATION TOWARD 100-PERCENT FULFILLMENT OF ORDERS REQUIRED THAT THE ATE-1 PLANT IMPROVE INTRAPLANT PLANNING, ARRANGE CONTROL OVER THE FULFILLMENT OF CONTRACTUAL COMMITMENTS IN EACH PRODUCTION SECTION, AND RESTRUCTURE THE SYSTEM OF INTERACTIONS BETWEEN PRODUCTION AND SALES SERVICES. Its experience shows that the sales service needs to be restructured both organizationally and methodologically. Its functions have been expanded considerably at the plant, and its role has been increased. All relations with the consumers, beginning with the receipt of the order and ending with the shipment of the prepared product, are concentrated in the hands of the sales workers. They have sharply increased their influence on the formation of the assortments (product list) program of the enterprise and on the restructuring of the production process.

Workers of the division have displayed initiative, independence, and, I would say, courage, entering without help from the outside and without the knowledge of the sales agencies into direct dialogue with the consumers and having been able to agree upon the consolidation of batches of products to be shipped. Moreover, the interests of individual clients were not infringed upon. For instance, for Goskomsel'khoztekhnika organizations the plant previously sent spare parts to the bases of the rayon subdivisions, while now they send them to the oblast and republic subdivisions. The innovation turned out to be rational and useful, since it became easier to form the shipment routes.

THE CONSOLIDATION OF THE BATCHES OF PRODUCTS THAT ARE SHIPPED IS ONE OF THE STABILIZING FACTORS IN DELIVERIES. Two tendencies affect the solution to this problem: on the one hand, in a dynamically developing national economy the product list (assortment) expands, and other the other hand, the means of transportation can handle larger cargoes. Because of this, unfavorable conditions are created for the enterprises when they fulfill contractual commitments for orders for small batches.

The stock-holding ministries and departments frequently do not think of methods for carrying out transit deliveries.

Small-batch and small-tonnage orders have a negative effect on planning the loading of production and make it impossible for enterprises to utilize their capacities efficiently because of frequent adjustments of the equipment. An increased number of orders and contracts makes it difficult to keep track of bank accounts and complicates control over deliveries. The manufacturing enterprises are forced to ship products in assembled cars and containers, frequently grouping in them products for a dozen or more recipients. This slows down the delivery time and frequently leads to spoilage and theft of the products enroute when they are being shipped to numerous points. In trying to avoid such situations, the enterprises fail to meet delivery deadlines and consolidate orders so as to ship products to the consumers once a year, and frequently at times that do not suit the latter. So it is even more instructive to study the experience of the ATE-1 plant, which works with its clients to find ways of streamlining deliveries, coordinates its actions with them, and meets them halfway in granting their wishes.

Streamlining the system of transit deliveries is a crucial problem. In addition to a revision of the conditions for delivery and a consolidation of the norms for shipment in car and container batches, in addition to improvement of the system for issuing orders, it is necessary in the system of the USSR Gossnab to expand the network of universal enterprises for sorting products and rendering production and other services to the consumers. This is a capital-intensive measure, but it is important for the national economy not only in order to strengthen delivery discipline, but also to increase the effectiveness of production and to utilize material resources and means of transportation efficiently.

Providing for small consumers is a serious problem. In order to solve it, from our point of view, IT IS NECESSARY TO PAY MORE ATTENTION TO THE DEVELOPMENT OF WHOLESALE TRADE. This would make it possible to lighten the fund conditions for a considerable part of the mass products. There would

also be a change in the psychology of the consumers. When an enterprise sees that it can obtain part of its products through wholesale stores, it will not store up surplus supplies. Now the enterprises and associations take all the stock they can get--if not for their own needs, then to exchange for materials and batching items of which they have a short supply.

The expediency of wholesale trade is increasing especially because of the course taken in the national economy toward expansion of the independence of the enterprises and associations. It is necessary to have a flexible combination of centralized and decentralized forms of product distribution.

But in order for wholesale trade to develop, it would be necessary to change the system of planning material reserves. Now up to 80 percent of the reserves are with the consumers and only a small part of them are at delivery enterprises of the USSR Gossnab system.

AND YET ANOTHER VERY IMPORTANT ASPECT OF THE EXPERIENCE OF THE ATE-1 PLANT IS THE UTILIZATION OF COMPUTER EQUIPMENT in solving problems of control and analysis of the fulfillment of contractual commitments. In places where they are really trying to achieve 100-percent fulfillment of deliveries, they cannot do without computers. It is impossible to account for all orders manually. And yet at many enterprises this is precisely the way it is done, and frequently with a consolidated product list as well. Machine accounting seems disadvantageous to some executives since it is impossible to conceal the truth from a computer. Like the ostrich, they bury their heads in the sand for the time being, not wanting to know the real state of affairs. Even within the limits of the established underfulfillment of the plan for deliveries--"the indicator of the lack of discipline," as it was called by the December (1983) Plenum of the CPSU Central Committee--certain managers look for loopholes to make the fulfillment of contractual commitments easier. It is more advantageous for them to account for deliveries manually, having them consolidated, in the cross section of stock holders, and not in terms of the hundreds and thousands of agreements and orders, and certainly not individually for the entire list of products. Workers of the sales division of the Chelyabinsk metallurgical combine, when asked the question of whether they keep track of deliveries in the cross section of agreements and orders, answered me quite frankly: "To calculate the number of unfulfilled contracts and the sum of failures to make delivery in keeping with them is not possible, since we keep accounts in terms of the stock holders."

"Computer-phobia" is not a phenomenon which appeared by chance. To a certain degree it reflects the inadequate recognition of delivery discipline and cost accounting (khozraschet) responsibility for it. Now there actually is an indicator of sales, and linked to it is the indicator of deliveries in keeping with agreements, which is not measured (not calculated in terms of the total value) and is not singled out in the plan.

ONE CAN JUDGE THE METHODOLOGICAL IMPERFECTION OF PLANNING AND EVALUATING THE LEVEL OF CONTRACTUAL COMMITMENTS ON THE BASIS OF THE OVERALL VOLUME OF SALES FROM THE COMPOSITION OF ELEMENTS OF THIS INDICATOR. The "Standard Instructions for Compiling Reports of Production Associations (Combines) and Industrial Enterprises Concerning Fulfillment of the Plan for Output," which

was approved by the USSR Central Statistical Administration with the agreement of the USSR Gosplan and the USSR Ministry of Finance, envisions the following elements to be included in the volume of product sales:

"prepared items produced during the report period by all shops of the enterprise, intended for sale on the outside, for their own capital construction and nonindustrial businesses of their own enterprise;

"semimanufactured products of their own production and products of auxiliary and subsidiary businesses which are sent outside, for their own capital construction and nonindustrial businesses of their own enterprise;

"work of a nonindustrial nature performed on orders from the outside or for nonindustrial businesses and organizations of their own enterprise."

As we can see, the volume of sales and the volume of deliveries under agreements are far from equal, not only in terms of the composition of elements, but also in terms of their purposes. The existing practice of forming the indicator of sales and "accounting addition" to it for fulfillment of assignments and commitments for deliveries of products opens up extensive possibilities for the supply enterprises to sell no small part of the prepared products, semimanufactured products and services in areas which are advantageous from the standpoint of the sales indicator, but run counter to delivery commitments. What are these areas? The output of above-plan products, nonstandard equipment for the needs of their own ministry, services on the side, raising the cost of commercial products as compared to that envisioned by the plan, overfulfillment of the plan for production and sales of miscellaneous products not envisioned by the agreements, and so forth.

No small "reserve" for fulfilling the sales plan for many enterprises is the so-called "product list advancement"--overfulfillment of the plan for production of certain kinds of products while for others it is not fulfilled.

Deliveries of illegal products are not only the result of violations of planning and contractual discipline on the part of the manufacturing enterprises, but also the result of poor control on the part of territorial agencies of the USSR Gossnab system. The recipients of the illegal products, who take them into their warehouses without keeping track of them and then pay the bills, also contribute to this situation. In this case, on the basis of Point 36 of the Provisions on Deliveries, the supplier has the right to credit these products to the account for fulfillment of contractual commitments.

In its socio-economic essence, the fulfillment of plans for production and deliveries strictly in keeping with concluded agreements and orders is for each production association and enterprise nothing other than the final national economic result of their activity. The December (1983) Plenum of the CPSU Central Committee pointed out the need to increase responsibility for providing for delivery discipline. In this connection, the experience of all the leading collectives who have recognized their responsibility and are orienting their production activity toward fulfilling all orders and contractual commitments on time is of great significance.

In the Scientific Research Institute of Economics and Organization of Material and Technical Supply (NIIMS) under the USSR Gossnab there is a special sector for organizational structures for supply and sales in the national economy. The enterprises and associations and their supply and sales services are still not paying enough attention to this. The NIIMS should expand the research in this area, study and generalize the experience of the best collectives, particularly the ATE-1 plant, and, on the basis of this, develop recommendations and proposals which are directed toward improving the management of deliveries of prepared products in enterprises and associations.

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INTRODUCTION TO ARTICLES ON ISSUES OF ECONOMIC THEORY

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 43-44

[Text] The party's appeal for the formation of a new type of economic thinking presupposes different principles of the utilization of nature and interaction with the environment than were previously adhered to. As was stated at the December (1983) Plenum of the CPSU Central Committee, "the modern scope and rates of development of productive forces require a change in our attitude toward questions related to environmental protection and efficient utilization of natural resources. This is a task of great economic and social significance."* Questions of efficient utilization of nature are predictably being brought to the fore in the program for the improvement of developed socialism; in the "Basic Directions for the Economic and Social Development of the USSR During 1981-1985 and the Period Up to the Year 1990" there is a special section entitled "Protection of Nature." The Politburo of the CPSU Central Committee has instructed the USSR Council of Ministers to prepare suggestions directed toward increasing the effectiveness of the entire system of management and control over the condition of the environment and toward improving the work and increasing the responsibility of the ministries and departments in this area.**

The magazine is offering for the readers' attention two articles which are devoted to questions of the utilization of nature. The authors approach a single ecological and economic problem from different sides and they see its solution on the paths of scientific and technical progress, intensification of production and development of the methodology and methods of economic research.

* PRAVDA 27 December 1983
** PRAVDA 21 January 1984

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IMPORTANCE OF BALANCING ECONOMY, NATURE STRESSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 44-61

[Article by P. G. Oldak, doctor of economic sciences, professor, Novosibirsk State University imeni Leninskiy Komsomol, a discussion: "The Balanced Utilization of Nature and Economic Growth"]

[Text] "More" far from always means "better": more dry, sunny days than are needed, more rain than is needed...and in the economy? If a country is producing more economic goods today than it did a year ago, is this better or not? Until quite recently there seemed to be only one answer: better. Growth of the social product was regarded as a generalizing indicator of the development of the economic system. High growth rates were regarded as reliable evidence of the economic achievements of the society and a synonym for progress. "No other of society's goals found more resolute support than did economic growth. No other indicator of the country's success met with such almost unanimous recognition as the annual growth of the gross national product."[1]

The logic is simple enough: the greater the social product, the greater the possibilities of satisfying current needs and solving problems of preparing for the future. But everything is true within its own limits. And the thesis that economic growth is tantamount to progress of the national economic complex is correct only when certain premises are assumed.

The first premise. The greater the economic goods the better if there are greater possibilities of social development, that is, under the condition that these goods correspond to an actual need. But if they are not recognized by the society as necessary and are not sold (and stack up in plant and trade warehouses), the more labor that is invested in them, the worse it is. Hence it follows that the indicator, say, of national income should be adjusted according to the difference between the created product and the product that is sold during the course of the year.

The second premise. More means better if qualitative advancement can be derived from it. But as a matter of fact, one light bulb which serves for 3 years is better than three, each of which burns for a half-year, and better than six of these light bulbs (for the same need is satisfied with less

expenditures of material and labor resources). Consequently, when evaluating the social product it is necessary to take into account which part of it corresponds to the highest quality standards.

The third premise. More means better if economic growth is not accompanied by growing disproportions and is not leading the system toward a breakup. In turn, less is far from always worse: it can be the result of a changeover to a higher level of technical decisions. "A reduction of outdated production can serve to increase the overall effectiveness of business. A reduction of all of production for a certain amount of time can essentially facilitate structural changes and create additional prerequisites for changing the country's economy to a new technical level."[2]

The fourth premise. More means better if one considers only the goal of creating economic goods without taking into account the influence of production on other aspects of social life. But this premise cannot be regarded as acceptable.

It is now well-known -- and this is confirmed by capitalist practice -- that in those cases when the anthropogenic load on natural systems exceeds their self-restorative potential there is an undermining of both the conditions for social development (deterioration of the environment, increased occurrence of diseases) and the conditions for economic development (the productivity of natural resources drops, expenditures on "capital repair" of natural systems increase, and if they are destroyed the society's prospects are narrowed).

Interpretation of these problems leads to the formation of new economic views and, particularly, new approaches to evaluating the results of the development of public production.

Evaluation of the Results of Economic Decisions

Today one can see fairly clearly two levels of economic decisions here: local (from the position of separate production subdivisions) and national economic (from the standpoint of the country as a whole). At the local level the results are determined by the categories of profit and profitability.

At the national economic level one distinguishes both the direct, local effect (the enterprise's contribution to the creation of economic goods), and the indirect, secondary effect. The latter can be of an economic, social or ecological nature. The secondary economic effect is a special result of the activity of the branches that are contributing to radical technical rearrangement of the national economic structure and a changeover to a new and higher level of public production.

During prewar years this role was played by branches of heavy industry, and above all machine building. Documents of those years emphasized the "high national economic effectiveness" of enterprises of heavy industry, even in those cases when they were operating on subsidies (that is, they were not fully covering production outlays). The Leninist formula: "Politics cannot but have priority over economics."[3] This seemed to express the requirement of taking into account the factors that lie beyond narrow economic calculations.

Today the role of a powerful accelerator of economic development is played, for example, by the production of microprocessors, industrial robots, laser equipment, optical fibers, and so forth.

The secondary social effect is the additional consequence of creating large productions for solving such problems as increasing employment in the region, increasing the incomes of the population and developing the social infrastructure. It is precisely for these reasons that the regions try to attract industrial facilities which will be important in the future.

The secondary ecological effect can be positive (parks in the city and suburban regions, efficient land reclamation, restoration of disturbed landscapes) or negative (pollution and destructive of elements of the environment). The negative effects of modern production on the environment, unfortunately, sometimes essentially exceed the positive effect. Moreover, reverse consequences arise--deterioration of the conditions for production and life. And actions for blocking the negative effects can bring about more negative results. Such processes have been given the name of feedback loops.

Here is one of the important areas of interdisciplinary research on the part of economists, ecologists and creators of technical systems. But now let us turn to another aspect: accounting for the secondary effects has been expressed in a certain development of economic views, and namely it has brought about both an expansion of the boundaries of economic measurements, and a departure beyond the boundaries of these measurements.

Traditionally, the field of economic measurements was limited to accounting for the expenditures of past labor, embodied in means of production, and live labor which was attached to a certain period of production (with respect to the national economy--annual). Such economic categories as production outlays, value, price, wages, profit, interest, rent and national income by virtue of their content have a certain measure of past and live labor represented in the product (or in its monetary equivalent).

The negative effects of production on the environment condition the growth of expenditures of labor both in the process itself of producing one product or another (changeover to technology for the protection of nature) and in the application of labor beyond the limits of the field and time of production of the corresponding product. This latter aspect makes it possible to single out the category of expenditures of future labor (permanent expenditures). These can include:

expenditures on reimbursement for material values (buildings, equipment, consumer property) in connection with their accelerated destruction;

expenditures brought about by the need to compensate for reduced productivity of natural systems (maintaining the purity of water in river and lake systems, restoration of soil fertility and so forth);

expenditures on maintaining the health of the population when it is weakened by a deterioration of the environment;

expenditures on restoring lost natural goods (restoring river systems, landscaping, measures for protecting the animal world).

And so it is time to change over to economic measurements in "three-dimensional space"--past, present and future. The question arises: what distance into the future should one take as the line of the economic horizon? In other words, within what temporal limits should the future be regarded as economically commensurable with the present?

One can approach an answer to this as follows. Value can serve as a measure for economic measurements. Under the conditions of modern scientific and technical progress, rapid changes are taking place in it. This means that economic measurements are reliable enough within the limits of short time intervals (up to 5 years), less reliable in medium-term intervals (5-10 years), rough in long-term intervals (10-20 years) and not definite enough in super-long time intervals (longer than 2 decades).

The economic horizon can thus be considered to be 20-25 years in the future, that is, up to the years 2005-2010. Consequently, when analyzing plans for large-scale transformations of natural systems it is correct to calculate post-expenditures (future expenditures on blocking and overcoming negative consequences) within the limits of a quarter of a century. Individual evaluations can also be made beyond the limits of the economic horizon. But they shall only be approximate amounts of those post-expenditures which one plan or another will include in future decades.

Calculating secondary effects raises one more problem--evaluating the factors that lie beyond the limits of economic measurements. As we know, economic science evaluates two aspects of the utilization of natural resources:

labor expenditures for drawing natural resources into public production--accounting for complete social outlays on production;

the influence of the productivity of natural resources (fertility of the soil, peculiarities of climatic conditions, wealth of deposits of minerals, convenience of exploitation, and so forth) on labor productivity and the profitability of production--accounting for rent components.

Moreover, it is necessary to keep in mind a third aspect of natural economic ties--the evaluation of labor expenditures on restoring resources of the environment. But the "wins" and "losses" of nature which are involved in public production cannot be reduced to labor expenditures. We cannot give an economic evaluation to the "work" of insects for pollenating agricultural plants, the "work" of the innumerable organisms that restore the fertility of the soil, or the "work" of the crayfish for restoring the purity of the waters of Lake Baykal. We cannot given even an approximate economic evaluation to the losses from pollution of underground waters (restoring their purity will require 2 or 3 centuries) or the destruction of mountain landscapes (self-restoration of mountain forests lasts more than a thousand years) or the destruction of soil (the restoration of soil takes several millenia). And the losses associated with the disappearance of various kinds of flora and fauna should be recognized as irreplaceable. We cannot evaluate the deterioration

of the quality of life because of the losses of purity of the water systems and the air or the destruction of landscapes.

It is clear that the lack of economic evaluations is certainly no reason to ignore these problems when comparing the variants of the development of production or the alternative of economic utilization of natural resources. Here we approach a noneconomic plane of decision-making.

This plane could be regarded from the viewpoint of the social norm and included in economic calculations as a system of given restrictions. Thus, guided by its own views, the society establishes norms for the utilization of labor resources (the permissible age for enlisting adolescents into public production, sanitary conditions, requirements for the protection of labor and so forth), fire safety norms for the construction of buildings, norms for transportation safety in traffic, and so forth.

Social norms for the utilization of nature should be arranged analogously. But there are difficulties here. The fact is that today science is not yet able to indicate precisely where the boundary of the permissible load on natural systems runs. Ecologists have formulated, in particular, the "10 percent rule": an ecosystem that is disturbed on an average of up to this level still operates normally, but at any moment--even from the slightest shock--it can be destroyed irreversibly.[4] But where the boundary of 10 percent runs in one ecosystem or another is something that nobody has yet been able to tell us precisely.

The traditional idea about the great power of nature still has its effect, and warnings from ecologists (which are not supported by indisputable calculations) are frequently ignored.

The time has apparently come to develop a new approach. Until such time as we are able to determine precisely the limits of the permissible load on natural complexes we should proceed not from the presumption of innocence with respect to nature (if there is no direct proof that a plan will cause irreversible changes in natural systems this removes all objections to its realization), but from the presumption of possible guilt (possible violation of the limits of the permissible load). Hence the requirement for proof that the proposed load includes a sufficient insurance reserve and, consequently, means a minimum risk of irreversible consequences.

Summing up the results, let us note that profitability is far from the same thing as the social results of production. An enterprise can operate profitably but, by polluting the environment it can essentially complicate the activity of other enterprises and therefore cause significant post-expenditures.

Hence the need for a generalizing socioeconomic criterion for the results of the functioning of production subdivisions. Such a criterion can be imagined as one which includes three lines of evaluations:

the fulfillment of planned assignments--state order;

the observance of social norms for management (including norms for labor organization and norms for the utilization of nature);

the profitability of the operation of the enterprise itself.

The comparisons are made according to indicators of profitability with the observance of the requirements of the state plan and social norms for management.

A New Class of Economic Tasks

It is becoming more and more obvious that we must evaluate not only the results of the activity of production subdivisions, but also the effectiveness of the selected types of utilization of nature or principles for constructing ties between nature and the economy. We have become accustomed to a situation in which in each individual case one looks for a solution to the most immediate problem and frequently does not raise the question of the long-term results to which consistent application of one principle or another can lead. Yet if a certain principle is applied to a broad group of problems of the same kind, we are faced with a particular strategy for the utilization of nature. Thus one can speak about the strategy for chemization of agriculture, the strategy for the regulation of the courses of rivers in order to obtain hydraulic energy, the strategy for redistribution of the water from rivers in order to make up for the shortage of water resources, and the strategy for controlling aggressive biological forms.

Man has always fought as hard as he could against his hostile neighbors: weeds, harmful insects, bacteria and rodents. At one time man was weak and basically had to defend himself from their attacks. The situation changed in the second half of this century. The successes of chemistry--particularly the discovery of DDT--offered what seemed to be the possibility of dealing a crushing blow to the hostile forms of life. And although this was not formulated clearly, man selected the strategy of protecting the earth from harmful forms: for 40 years an unprecedented chemical war was waged against insects, bacteria, weeds and rodents.

Today we can sum up the results. They are extremely remote from the goals that were set. We have not won the battle to purge the earth of biological forms which do not suit us. The situation is no better now. It is known that at the dawning of the pesticide industry only the housefly was resistant to toxic chemicals. By systematically applying toxic chemicals on increasingly large scales, man has changed the chemical characteristics of his environment. And what happened should have been expected--the insects adapted to the new environment. We ourselves have contributed to the selection of kinds of insects which can normally withstand doses of pesticides which were previously fatal to the majority of them. According to data of the FAO [Food and Agriculture Organization of the United Nations], in 1965 there were 182 of these species, in 1968--228, in 1977--364,[5] and in 1983--about 500.[6]

Recently specialists of a university in San Francisco discovered that certain insects have additional genes which condition their hereditary protection against possible changes in the chemical characteristics of the environment.[7]

And since, relying on chemistry, agricultural practice has begun to refrain from crop rotations and alternation of crops, and with the growth of production they have plowed under outlying areas of forest (groups of trees and bushes), the biocenoses [biotic communities] that are characteristic of them have disappeared. We have actually reduced the pressure on those very insect pests which we wanted to be rid of. Hence the "unforeseen" increase in the number of insects immediately after conducting measures to fight against them, the so-called boomerang effect.

One can also discuss the boomerang effect with respect to the entire line of the struggle against insects. The quantity of pesticides used in the world in 1978 exceeded 1.8 billion kilograms--about 0.5 kilograms for each resident of the earth.[8] But one cannot say that the number of insect pests and bearers of diseases have decreased, and their activity has even sharply increased. Because of their great genetic plasticity and diabolical fertility, they have adapted to the new situation.

After a number of years of calm, locusts are again making their presence known. More than 20 percent of the territory of our planet, where approximately one-fifth of mankind lives, can be subjected to their attacks. They are the most dangerous (after mice) economic pest. In Muslim countries locusts are called the "scourge of Allah."

Malaria, which is carried by mosquitoes and not so long ago was completely eliminated from many regions of the planet, is now returning. There is still a real danger of an epidemic in 99 countries of the world.[9] In Sri Lanka 2 million people have caught it, and in India--6 million. The countries of Central America have announced a malaria epidemic of unprecedented scale. Reports from the World Health Organization show that insecticides against the mosquitoes that carry the disease and medicines against the causative agents are losing their effectiveness.[10] Malaria has once again taken over first place among the tropical diseases.

According to reports, rodents are also increasing their resistance to toxic chemicals. According to data of the FAO, there are seven unreceptive species of rodents, including rats. Let us note that rats destroy approximately one-fifth of all of the areas planted in grain crops.[11]

And so the course toward ridding the earth of rodents and insect pests has turned out to be unrealistic.

The adaptability of bacteria to the means of conquering them is also increasing. Immoderate application of antibiotics has led to the selection of resistant forms and has accelerated evolution in the direction of the strengthening of new indicators. As a result, medicine is beginning to encounter resistance of pneumococci to penicillin, and some of them--also to other antibiotics.

Hence the new view of the problem: refraining from cavalry attacks; requiring a study of the complicated ties among natural systems; and observing the need to take into account the reverse influences of changes in the environment both on the economy and on man himself. There arises a need to develop an overall

strategy for the interaction between man and the world of aggressive biological forms. It must be based not on the idea of destroying forms which do not suit us but, alas, on the principle of coexistence and the search for effective means of restraining them. With respect to insects, this is a policy of integral control which includes chemical and biological control of the propagation places. It is a general rule to vary the means, not allowing a stable chemical change in the environment, and thus not contributing to the isolation of new forms against which it is becoming increasingly difficult to fight.

Additionally, there is the methodological task of selecting the principles for making plans which would include both an evaluation of the strategy for the utilization of nature and a generalizing socioeconomic evaluation. The following positions are expecially important.

Plans which involve any strong influence on natural complexes should be offered along with alternative variants (two or three) which reflect various types of arrangement of ties between nature and the economy. It is assumed that every plan will include a complete (for the level of scientific research that has been reached) characteristic of the load on the natural complexes and the expected consequences (feedback loops). The application of one type of arrangement of natural economic ties or another to the solution of each individual problem should be demonstrated to lie within the limits of the permissible loads on natural complexes. Variants that do not have a sufficiently strong substantiation are excluded from further consideration.

The generalizing socioeconomic evaluation of the selected alternative variants leads to the criterion of "expenditures-results." "Expenditures" include both current expenditures (live and embodied labor) and post-expenditures. The category of "results" includes indicators of primary and secondary effects (economic, social and ecological). The following rule is applied when drawing up alternative variants: one compares either plans that require either approximately the same expenditures but differ in terms of the set of results (the best is considered to be the plan which makes it possible to achieve the greatest results) or plans that produce approximately the same set of results but differ in terms of expenditures (the plan which achieves the given results with the least expenditures is preferable).

A developed evaluation of the results of economic decisions places the number of requirements on the development of general scientific research.

The first requirement is the creation of a larger stockpile of knowledge about ecology. A typical feature of modern civilization is its technical orientation. Scientific progress since the time of the industrial revolution has proceeded along the line of accumulation of knowledge which is directed toward the most complete possible mastery of the forces of nature. A study of the laws of the arrangement of life on earth and the conditions for the development of ecological complexes has been pushed into the background. Today, unless the stockpile of ecological knowledge grows more rapidly, science frequently enters into the role of a magician which has let the genie out of the bottle and studies the question of how to put it back in again....

A more rapidly accumulating stockpile will make it possible to conduct reliable expert analyses of the plans for transforming natural systems and all innovations, regardless of how large. To create this, it seems necessary to resdistribute the funds allotted for scientific research in favor of sciences of an ecological profile.

The second requirement is the creation of centers for interdisciplinary scientific research. The pyramid of science is increasingly being divided up at its lower levels. New areas of research are appearing, which are being transformed into independent sciences (there are now more than a thousand sciences and scientific disciplines in the world).

Differentiation of knowledge has made it possible to sharply raise the qualification level of special scientific research, but at the same time it has engendered the "tunnel vision" effect. Frequently one loses sight of the overall characteristics of the number of complicated socioeconomic processes. Hence there is a certain "close-handedness" of science. Let us recall that science did not give us predictions of the approach of the ecological, energy, raw material and food crises in the capitalist world. Serious study of these problems began after the crises had already broken out.

It is not a matter of the weakness of science, but that we are not promptly forming centers which could integrate knowledge at a high interdisciplinary level. There are dozens of institutes, faculties, departments and laboratories working in each scientific research area of any size. But there is still not a single institute which would specialize in the study of the system "society--production--environment" with respect to individual regions of the state. More than 100 scientific subdivisions have at one time or another dealt with the problems of Lake Baykal, but not a single center was ready to play the role of the general research center for the problem in its entirety (ecological, scientific-technical, economic and social).

Because of the lack of a reserve of ecological knowledge it is important to rely on accumulated world experience and the potential of live knowledge (the experience, creative capabilities and intuition of scientists and practitioners). It is precisely this gap that is to be filled by centers for interdisciplinary scientific research. In new scientific subdivisions one should concentrate specialists with high intellectual potential and unconstrained thinking, and their work should be arranged in such a way that they can rapidly discover and verify basic scientific hypotheses, that is, fundamental ideas about the conditions for the development of one tendency or another. Scientific formation of basic hypotheses is becoming the main factor in the precision of prognoses and, consequently, the initial tenets of the policy for the utilization of nature.

The third requirement is to overcome the obsolete practice of evaluating large-scale intervention in nature according to the conclusion of a narrow group of experts, without extensive public discussion of the plans.

There are more than enough examples in science of how outstanding scientists and politicians can be locked into traditional views, not evaluate what is new, and produce erroneous conclusions. It is known that such recognized

scientists of their time as Laplas, Monge and Volney did not want to listen to Robert Fulton, the inventor of the steam engine. The famous astronomer Arago denied the possibility of railroads. An active member of the French Academy, Lalande, categorically asserted that it was in principle impossible to fly on equipment that is heavier than air. Many German scientists, including such eminent ones as Stark, Leonarde, Goede and others arranged public meetings to speak out against the theory of relativity, and, of course, against its creator--Einstein. It is known that the great physicist Rutherford, the first person in the world to carry out a nuclear reaction, to the end of his days rejected the practical possibility of obtaining atomic energy. Even in 1933, that is, after the discovery of chain reactions, at the annual meeting of the British Queen's Society he said that "anyone who claims that it is possible to obtain energy from within the atom on a large scale is speaking the purest nonsense."[12]

There are more than enough examples of how expert evaluations conducted without extensive discussion can support bad decisions.

Attention should also be given to the question of the social motivations for the positions that are defended. Advancing one new program or another is not only the suggestion of a method of achieving common national goals, but also a desire to achieve priority in the distribution of centralized resources in order to solve (local or branch) problems. In other words, each plan that is the result of initiative reflects a certain interest--the social motivation of the management of corresponding units of the national economic complex which in one way or another orient the scientific subdivisions under their jurisdiction toward the protection of these interests.

Therefore it seems extremely important to have special procedural conditions. With respect to any large-scale plans that essentially affect regional or branch interests, it would make sense to have a policy whereby the initial plan for the first (selection) stage would be developed in two independent centers with alternative concepts of solving the problem. Then both plants would be brought up for consideration by the scientific community so that it would be possible to compare their strong and weak points.

An approach to new phenomena with stereotypes that took form 10 years ago is one of the reasons for the adoption of erroneous decisions. Hence the special significance of means of mass information in forming a new social consciousness. Extensive publicity in the press of issues that bother the population of the region, oblast or country makes it possible to overcome the convenient stereotype of belief in the boundless forces of nature and to recognize the irreversibility of possible mistakes. Without extensive publicity we will not find that intolerance which forces all--scientists, planners, engineers and businessmen--to seek and find strategically correct decisions, and not simply the ones that are most advantageous today.

Thus we encounter an extremely broad group of problems which can no longer be defined as purely economic ones. They are biosocial problems which require a coordinated solution to economic, social and ecological problems. Hence the need to change over to interdisciplinary research. Economists should play the leading role here: the statement of the problem of managing the biosocial

system, the construction of a tree of decisions, the formulation of assignments for developing various positions, and the integration of the plans that are presented into total programs and conclusions.

In order to solve the new problems we need economists of a broad profile who are sufficiently trained not only in the area of economic science, but also in mathematics, sociology and ecology, and also in what might be called general culture (extensive familiarity with history and modern world experience). So far such economists are not being trained yet, and this is one of the reasons why economic science is slow in reaching the level of interdisciplinary research.

FOOTNOTES

1. Dj. Gelbreyt [J. Galbraith], " Novoye industrial'noye obshchestvo" [The New Industrial Society], Moscow, Progress, 1969, p 218.

2. V. M. Kudrov, "Scientific-Technical Progress and Structural Shifts in the U.S. Economy", SShA No 11, 1980, p 24.

3. V. I. Lenin, "Poln. sobr. soch." [Complete Works], Vol 42, p 278.

4. A. Yablochkov, "Each Facet is Invaluable", PRAVDA, 24 September 1983.

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6. ZA RUBEZHEM, No 31, 1983, p 29.

7. RZh 72, No 11, 1979, p 120.

8. RZh 72, No 4, 1979, p 120.

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10. ZA RUBEZHEM, No 6, 1983, p 21.

11. ZA RUBEZHEM, No 33, 1977, p 20.

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EFFECTS OF SCIENTIFIC, TECHNICAL PROGRESS ON NATURE DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 61-76

[Article by M. Ya. Lemeshev, doctor of economic sciences, professor, Central Economic and Mathematical Institute of the USSR Academy of Sciences (Moscow): "Scientific-Technical Progress and Nature"]

[Text] In economic literature three principal peculiarities have been established as typical of the modern stage of development of productive forces. They include, first, the growing shortage of resources and the increased cost of exploiting them; second, the increasing mass of production wastes and the increased expenditures on salvaging or destroying them; and, third, pollution of the environment and increased expenditures on fighting against this.

It is from these positions that the problem of harmonious relations between society and nature is usually evaluated and the strategy for solving it is formulated: at the base lies the need to increase expenditures on environmental protection measures. It is noted that the increased expenditures on extracting natural resources and protecting the environment limits the rates of economic development, and the expenditures themselves are perceived as deductions from the national income.

At first glance such ideas are obvious and correct. The consumption of natural resources is steadily expanding and many of them are not unlimited. Wastes from production and consumption are also growing. Expenditures on preventing or reducing pollution of the environment are increasing. But the conclusions from these obvious facts can by no means be regarded as indisputable, and even the very concept requires serious critical analysis and refinement.

Are Natural Resources in Short Supply?

The concept "shortage of natural resources" when not related to specific conditions seems to lack any economic meaning. Nature in its essence is unlimited, as the universe is unlimited. Therefore a statement about a shortage of natural resources on our planet can hardly be correct. For mankind has investigated and brought into economic circulation only a small

part of the resources of the earth's bio-, litho- and hydrospheres. The depths of open pits do not exceed 700 meters, mines--2.5 kilometers, and wells--are limited so far to 10,000 meters.

We do not have sufficient reason to speak of a shortage of one kind of natural resource or another either. Thus the greatest shortage is considered to be in energy supplies. But the shortage of these is conventional. If, according to prognosticatory evaluations, such energy bearers as oil and gas, with the present degree of their extraction, are indeed appreciably limited, there are hundreds of times greater supplies of coal, bituminous sand and shale.

Moreover, the shortage of certain kinds of traditional natural resources is also conventional. As we know, petroleum is the energy resource that is in the shortest supply. But with modern or, rather, currently used, methods of extraction, no more than 30-40 percent of the potential supplies of it are being extracted. Let us add that energy resources, after they are separated from nature, are far from being fully consumed: their efficiency factor is 30-35 percent at best.

When speaking about the shortage of natural energy resources one cannot forget about their interchangeability. Today nine-tenths of them are combustibles (petroleum, natural gas, coal and so forth) which are in principle irreplaceable. But there are also inexhaustible sources such as energy from the sun and wind, the ocean tides and the deep layers of the earth, and so forth.

The question arises: why does society not turn to the limitless energy resources instead of staying with the traditional limited ones and then utilizing these incompletely, thus aggravating the shortage? There are many reasons for this but it is possible to single out three main ones.

First--the inadequate level of development of science and technology. So far there are no reliable theoretical foundations for exploiting inexhaustible resources, technological processes have not been developed, and the necessary equipment has not been created. A clear example is the difficulty of utilizing the immense amount of energy from sea currents and tides.

Second--the high level of expenditures on organizing new technologies. An example of this can be the batteries that are necessary for transforming energy from solar radiation into electric energy. Thus the silicon solar batteries that are used in artificial earth satellites are technically complete and are still irreplaceable in space, but the energy produced by them costs 100 times as much as that obtained at a thermal electric power station.

Third--the inadequate economic motivation for production to apply new technological decisions. This is conditioned by the imperfect nature of economic ties. Such a situation is observed, for example, in petroleum industries where new technological methods make it possible to considerably increase the proportion of oil that is extracted. But since the proportional individual expenditures on its extraction (with stable wholesale prices (at which the enterprises sell crude oil) are high, the new devices are slow in being assimilated.

This situation is typical not only of energy resources. The situation with respect to water resources is especially significant. The USSR is one of the countries of the world that is best supplied with water. Our country's replaceable water resources are estimated at 4,300-4,700 cubic kilometers a year, that is, 12-15 percent of the average annual water in the rivers of the planet, while the population of the USSR amounts to only 60 percent of world population.

Nonetheless in recent years there has been a shortage of water. The reason for this has been primarily the rapidly growing consumption of water: while in 1913 the water intake did not exceed 45 cubic kilometers, by 1940 it had doubled, and in 1975 it had reached 335 cubic kilometers. The main consumer of water is agriculture; it takes in 170-180 cubic kilometers a year. And a large part of this water is used in irrigation farming where up to 70 percent of it is expended without the possibility of replacement. Thus in regions of Central Asia, just as a result of filtration in irrigation systems the losses reach 40 percent. We must add to this evaporation from the main and irrigation canals and from the surface of the soil, and also losses because of the imperfect technology for irrigation and the inefficient utilization of irrigation water when it is distributed among the agricultural crops.

Yet even with the modern level of technical equipment and technology, these losses could be eliminated. Research and planning developments show that in regions of Central Asia and Kazakhstan, just renovation and technical improvement of irrigation systems on the basis of developed and existing technology would make it possible to save 23 cubic kilometers of water a year, which is twice the annual amount of water in the Syr Darya.

Let us note that this figure is close to the projected figure for the first part of the diversion of the flow of Siberian rivers into Central Asia and Kazakhstan (25 cubic kilometers a year). Reconstruction of irrigation systems in the region in the next 5-10 years should thus be regarded as an alternative to the gigantic project of diverting the rivers, whose economic and especially ecological consequences are still not completely clear.

The latest methods of utilizing irrigation water such as the drop method and programmed irrigation promise even greater savings of this resource which is in short supply and a corresponding increase of its reserves. Thus the method of applying to the soil chemicals which are dissolved in water controlled by the drop method has already been applied in England for several years. While with ordinary sprinkling with herbicides 225-230 liters are used for each hectare of planted area, the new method reduces the expenditure to 25 liters, that is, to one-ninth.

There is thus reason to assert that the "shortage" of natural resources is a result not of an inadequate supply or an exhaustion of them, but of the imperfection of the production technologies and economic methods of the utilization of nature which are applied. Consistent development of resource-saving technologies and economic incentives for their assimilation open up a real possibility of overcoming this "shortage."

Are Wastes Inevitable?

The idea that production invariably involves the output of wastes has become deeply rooted. Engineers, when developing, say, a new plan for an ore-enriching combine or metallurgical plant, along with the shops for the main production must necessarily envision a special territory for dumps and storage places for tailings. In order to fill them up with wastes it is necessary to have special transportation, equipment and so forth. For large thermal electric power stations they plan gigantic gas and dust-removing pipes that are 200-300 and even more than 400 meters high. When erecting animal husbandry complexes, the planners and builders develop complicated equipment for removal of the animals' excrement with water, even though this causes biogenic pollution of the adjacent territories. One is convinced that the output of wastes in industry, agriculture and construction is planned along with the products of the basic profile. Moreover, the growth of their volume is frequently greater than the output of the main product.

The fight against production wastes has become one of the most crucial technical, economic, social and ecological problems. And yet wastes from industrial production are most valuable products which are frequently in short supply and needed by the national economy.

Let us recall the wise judgment of D. I. Mendeleyev that the main task of advanced technology is to obtain something useful from what is useless. An example of this can be ash--the waste from thermal electric power stations. Considerable quantities of it are accumulated on the territory of the country each year. At the Khabarovskaya TETs-1, for example, every other day the ash is hauled away on a heavy-duty railroad train and during the year throughout the area there are more than a million tons of it. How does one fight against this constant source of pollution? At the Khabarovsk Brick Plant they conducted an experiment: they added ash to a charge instead of coal dust. The brick turned out to be much stronger. The plant began to save 10,000 tons of coal each year and the products were less expensive. They added ash to concrete and saved hundreds of carloads of cement which is in short supply. It can also be used instead of chips and gravel, sand and clay, lime and asbestos. Ash is an excellent material for road construction, saving up to 18,000 rubles on each kilometer of asphalt highway. But so far only an extremely small proportion of this secondary raw material is being salvaged.[1]

A situation in which such an invaluable gift of nature as agricultural land falls into the category of "wastes" is a clear misunderstanding. Productive land that is lost is practically irreplaceable. Protecting it has not only economic meaning, but also social significance since land is the first and an indispensable condition for the existence and development of the society. K. Marx emphasized that "even a whole society, nation or even all-existing societies taken together are not owners of the land. They are only its masters who use it and, like good fathers of families, they must leave it in an improved condition for subsequent generations."[2]

The overall farming area of our country is 2,227,500,000 hectares; of this figure, agricultural land comprises 606.0 million hectares or 27 percent; and plowed land--227 million hectares, that is, approximately 10 percent of the

territory. As a result of planting crops on new land which was previously unproductive, in the past 25 years the amount of agricultural land and arable land has been maintained at approximately the same level. This has been achieved, however, at the price of considerable expenditures, since the land is frequently used for nonagricultural purposes.

In principle the withdrawal of agricultural land is predictable and inevitable. Advancement along the path of scientific and technical progress and the transformation of the biosphere into a neosphere which was predicted by V. I. Vernadskiy are accompanied by a transformation of the broad technogenic landscapes and urbanized agglomerates as well as the appearance of gigantic megalopolises ("overgrown" cities). Nonetheless under socialism this process can and should be deliberately controlled. For nonagricultural needs we should use only inconvenient less fertile land which has low productivity and only in extreme cases--land which is suitable for agricultural production and recreation.

So far all these millions of cubic meters are being returned to agriculture in extremely modest quantities. Yet black soil is most valuable fertilizer for humus-poor less fertile land.

Black soil which has been removed and piled up is frequently washed away and leached away, it loses its productive properties and it is transformed into black powder. With the current practice of management among inefficient managers this situation is quite explicable. Because for them black soil is a waste which restrains economic activity. Expenditures on its utilization in order to recultivate land are a burden on mining, they increase the production cost of the ore, they reduce the profitability of production, they reduce the material incentive fund....

There is one way out of this situation: we need an economic (monetary) evaluation of the land according to the effect it brings to the national economy. All land should be evaluated, both that which is assigned and that which has been recultivated. Land should be allotted for nonagricultural needs according to the principle of reimbursement (for payment) in keeping with its economic evaluation. And recultivated land, also strictly in keeping with its economic evaluation, should be taken into account on the books of mining enterprises or specialized enterprises. Then the recultivation of the land would be evaluated not only from the position of the national economic value, but also from the standpoint of the economic advantage to the business subjects--branches, associations and enterprises.

There is a good deal of positive experience in recultivation of land that has been damaged by mining developments. As an example let us give the Ordzhonikidze Ore-Enriching Combine [GOK] in Dnepropetrovsk Oblast. An overall area of 20,000 hectares has been allotted for open-pit development here, and about 7,000 hectares are taken up in mines. Powerful, highly productive equipment is used: more than 400 million cubic meters of ore-bearing mass are processed each year. Recultivation of the damaged land is included in the technology for extracting manganese ore. Large-scale scientific and practical problems are solved: the organization of mining work in a continuous cycle from the removal of the fertile layer to its replacement

on areas that have been worked; methods of spreading earth with less sedimentation; streamlining of dumps; agrotechnology of raising plants on restored land; utilization of worked mines for industrial and domestic structures, and so forth. It is typical to have multifaceted assimilation of damaged land: agricultural crops are raised here on an area of about 400 hectares--this land has been turned over to the kolkhozes; 400 hectares have been planted in forests and orchards, and about 300 have been used for water reservoirs; a recreation zone has been created on an area of 76 hectares. Before the year 2000 at the Ordzhonikidze GOK the mines will occupy another 6,500 hectares; it is planned to restore and utilize another 7,500 hectares of damaged land. This practice was economically justified after outlays for recultivation of the land began to be included in the expenditures for the extraction of ore and the sales price of the ore was adjusted.

Thus one can see a solution to the problem. This is also confirmed by the experience of socialist countries. Thus in Bulgaria there is a rule in effect, according to which the amount of land allotted to mining enterprises cannot exceed the amount of area they have already recultivated. This approach to planned socialist management can be applied to work not only in the mining, but also in the timber industry and other industries that exploit nature.

There is large-scale, well-developed and simple technology for salvaging materials in the production of construction materials. Experience shows, for example, that these materials reduce the cost of the construction of highways by one-third. Wastes from the coal industry are being utilized extensively in the production of ceramic items and mineral fertilizers as well as for filling in the worked areas of coal mines.

Slag, sludge and other wastes from metallurgical and chemical production are extremely valuable as a source of secondary mineral resources. This is a truly inexhaustible reserve. Thus sludge accumulations from chemical enterprises contain from 0.4 to 10 percent oxides of iron, aluminum, chrome, nickel, metallic zinc, copper, sulfur and other items. The majority of useful components contained in wastes are among the resources that cannot be restored, which attaches special significance to their productive utilization.

In a number of cases it is even more efficient to utilize wastes than it is to utilize the initial raw material. In ferrous metallurgy, for example, 1 kilogram of scale replaces 1.4 kilograms of sinter charges, 1.2 kilograms of blast furnace charges and 0.8 kilograms of steel smelting charges. The time period for recouping capital investments in productive processing of waste does not exceed 5 years here (with a normative of 8-9 years).

Energy expenditures on obtaining metals from wastes are several times less than from ores. A ton of aluminum from wastes costs one-ninth as much as when the ore raw material is smelted, copper--one-sixth, zinc--two-sevenths and lead--two-fifths.

Salvaging wastes from the processing of natural raw material is not only ecologically, but also economically effective. The majority of these are valuable material resources and they appear to be wastes only from the

standpoint of the narrow branch single-product production technology and the imperfect economic mechanism. The fact is that there is actually no material incentive for salvaging wastes. The practice of distributing the added product created at enterprises is such that on an average for industry only 17 percent of the sum of the profit is deducted into the economic incentive funds for the production collectives.[3] Profit from productive utilization of wastes is taken into account in the overall "pot" and, consequently, it is not affected by the same normative as the profiled production is. It would be efficient to take into account the profit from the salvaging of wastes separately and to leave it at the disposal of the enterprises. There would arise a real economic incentive to assimilate reduced-waste and waste-free technologies.

Causes of Pollution of the Environment and Ways of Fighting Against Them

Protection of the environment from pollution is a comprehensive, multifaceted, or, as they now say, interdisciplinary problem. Indeed it does set technological, ecological, sanitary-hygienic and socioeconomic problems for scientists and specialists. It is obviously inefficient to solve them separately. It is necessary to have a comprehensive strategy for protecting nature in general and a program of antipollution activity in particular.

Analysis shows that fighting against pollution of the environment is being done one-sidedly now. Pollution is regarded as a result of the growth of production and consumption, that is, it is being recognized as essentially inevitable. In ecological and economic models the increase of pollutants, as a rule, is taken as proportional to the expansion of polluting industries. Many scientists speak of the inevitability of a critical level of pollution and of the need to stabilize the economy and so forth. The logic of such an approach leads an extremely strange and certainly not inoffensive idea of the division of functions in the society: certain ones (enterprises, branches) pollute the environment while others (the state and the society) fight against pollution. This is inherent in capitalism where for entrepreneurs the goal in the development of production is maximization of profit, and this is absolutely not a part of socialist management where the enterprise, being the main national economic unit, is called upon to develop production and to maximize on the contribution to the public well-being.

In order to coordinate the economic interests of socialist enterprises in the state in the utilization of nature, it is necessary first of all to clarify the nature and essence of pollutants. Let us take air pollution, which is widespread and causes the most socioeconomic harm. Even now medical and sanitary and hygienic experts can find in the gas and dust discharges from industrial enterprises about 150 substances that cause harm to the health of people. Information about these substances is increasing regularly, as sanitary and hygienic research develops.

An economist is not surprised that workers in the public health system regard the ingredients of the discharges only as harmful, and it is fair of him to make sure that the enterprises and planning and economic organizations limit the content of harmful substances in the air to the maximum permissible concentrations. But it is difficult for the economist to understand engineers

when they raise the height of gas discharge pipes in order, following the requirement of medical experts, to disperse the harmful substances over a larger territory and thus reduce their concentration. This is difficult to understand since the discharged substances which are harmful from the standpoint of medicine are by and large useful to production.

The most widespread air pollutant is sulfur dioxide (SO_2). In high concentrations SO_2 can cause harm to the health of people and to animals, reduce the productivity of agricultural crops and forest areas, and cause accelerated wear and tear on metal structures, machines and buildings.

But when it is gathered, this dangerous air pollutant turns out to be a valuable semiproduct for obtaining sulfuric acid, for which there is a constantly growing need in the national economy. Incidentally, we are the first in the world to assimilate a technology for salvaging SO_2. As early as the 1930s at the Kashirskaya GRES near Moscow successful experiments were conducted in gathering this substance. In the 1950s at the Moscow TETs No 12 they constructed an experimental industrial installation which annually extracted more than 10,000 tons of 100-percent sulfur dioxide from smoke. Similar but larger sets of equipment are in operation at the metallurgical combine in Magnitogorsk and at other enterprises. At the Voskresensk Minudobreniya Production Association near Moscow and several other enterprises of the chemical industry at the end of the 1970s they organized the production of valuable chemical products worth several millions of rubles a year from discharge gases.

The time period for recouping capital expenditures for these purposes by obtaining additional output in reducing the economic harm from air pollution does not exceed 3.5-4 years, that is, about half the normative time period. The national economic effect produced by waste-free technology is shown by this calculation: if all TETs's were equipped with similar gas purification installations it would be possible to cover half of the national economy's need for sulfuric acid! The solution to the problem is especially crucial since approximately 45 percent of the solid fuel we extract contains sulfur coals which give off large quantities of SO_2 when they are burned.

Another direction of the fight against the pollution of the air with sulfur dioxide is economical expenditure of fuel. During the past 10 years the country's thermal electric power stations have reduced the proportional expenditure of fuel per kilowatt-hour of electric power from 428 to 337 tons of conventional fuel, that is, by 22 percent. In addition to the effect from saving fuel, there is a sharp reduction of harmful discharges into the atmosphere and, consequently, of the economic harm from pollution. The possibilities here are far from exhausted. At the Kostromskaya TETs the proportional expenditure of fuel has been reduced to 317.7 grams. If this level were reached by all TETs's, this would be tantamount to a very appreciable reduction of discharges of SO_2. Calculations show that additional expenditures involved in the introduction of new technologies are rapidly recouped.

A certain amount of harm is also caused by pollution of the waters: the fish productivity of the rivers and lakes is reduced, expenditures on preliminary purification of polluted water before its domestic and industrial consumption increase, the water areas lose their recreational value, and so forth.

The shortage of water resources has already been discussed. Its appearance is obviously related to the historically formed idea of water as an unlimited gift which is intended to be used and does not need to be reproduced. In the age of the scientific and technical revolution this viewpoint appears as an anachronism and a profound delusion. Analysis of water consumption convinces us that trying to solve the problem of the water shortage by bringing it in from neighboring or distance territories or even from the world ocean without improving the technologies for its utilization means nothing more than increasing the amount of polluted water.

It is possible to solve the water problem in principle only by developing an attitude toward water as toward a renewable and reproduceable resource. The path to solving the problem lies in economical expenditure, reduced pollution and better purification of utilized water.

The reserves for economizing on fresh water are immense. They include, above all, changing industry over to recycled, closed water supply systems. A good deal of experience has been accumulated here. During 1971-1982 the output from petrochemistry increased essentially while the intake of fresh water remained unchanged. During recent years the water circulation in this branch has reached 87 percent. Many industrial enterprises have already completely eliminated the discharge of waste waters. They include the Kremenchug, Volgograd, Karmanov, Lisichansk and Pavlodar oil refineries, the Volgograd and Kremenchug plants for synthetic rubber and rubber industrial items, and the tire plant in Volzhsk.

In other branches that use large quantities of water the proportion of recycled water supply, unfortunately, is significantly lower. Thus at enterprises of ferrous metallurgy it amounts to an average of 80 percent, the chemical industry--77 percent, the pulp and paper industry--52 percent, and nonferrous metallurgy--only 46 percent. Yet in nonferrous metallurgy they have already found effective technical solutions. The replacement of water cooling of metallurgical equipment with vapor cooling will reduce the expenditure of fresh water in the branch by 350 million cubic meters a year, and this means essentially reducing the polluted wastewaters.

Recycled water supply systems are not only necessary to fight against pollution, but they are also economically effective. At enterprises of the Ural area (Verkhne-Isetskiy Metallurgical Combine imeni V. I. Lenin, and others) the cost of recycled water is two-thirds that of water that is taken in fresh. This has become possible because of the reduction of expenditures on building water intake structures, pumping stations and water lines for delivering fresh water and preparing it. Let us add that regenerative methods of purified water in closed systems make it possible to obtain a good deal of valuable products: up to 3-5 million rubles' worth a year at large chemical enterprises.

Environmental protection is a complex problem. It can be solved only through coordinating the efforts of scientists and specialists of many branches of learning and production, on the basis of the achievements of scientific and technical progress. Frequently the key to success lies far from the immediate sources of pollution.

It is known, for example, that the current pollution of waters with nitrates and phosphates is related to the chemization of agriculture. It is not possible to avoid this by purifying the discharged irrigation water. The cause lies deeper. The fact is that mineral fertilizers are produced by the chemical industry in forms in which the plants cannot assimilate more than 40 percent of the nutritive substances. The other 60 percent go into solution, are washed out of the soil, and end up in the surface and ground waters. Consequently it is necessary to begin the fight against pollutants "far" from agricultural production, and namely--it is necessary to develop scientifically and assimilate the output of forms of mineral fertilizers in which nutritive substances can be more fully assimilated by the crop plants.

The battle against pollutants is not an isolated task, but an organic part of the overall problem of streamlining the utilization of nature which is directly related to saving natural resources and developing and assimilating reduced-waste and waste-free technologies. The time has come to abandon outdated ideas about nature as a force which opposes man, as a bottomless storehouse from which it is possible to glean resources without measure and without reimbursement. Scientific and technical progress is called upon to produce means and methods of its efficient protection and reproduction.

One cannot but recognize the inevitability of increased expenditures on the protection of nature. But these are not losses for the society and are not deductions from the national income and consumption. They bring a high social and economic effect to the socialist national economy.

FOOTNOTES

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EFFECTS OF SPECIALIZATION SALES DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 77-93

[Article by D. V. Valovoy, doctor of economic sciences (Moscow), a discussion: "Specialization and Sales"]

[Text] A Journey Beyond...the Plan

After it became specialized the plant for tractor spare parts in Minsk was renamed and called a gear plant. Why was this done? This is discussed in the article by Ye. Gel`fand, "A Journey Beyond...the Plan."[1] After this change the crankshaft which used to be delivered to the Volgograd tractor plant was eliminated from the products list because it did not correspond to the new specialization. Nonetheless the forging shop continued to stamp these shafts and send them to the Krasnouralsk machine shop for processing and subsequent delivery to Volgograd. The gears and two kinds of crankshafts are sent from the Minsk plant to the Voroshilovgrad crankshaft plant for finishing. The Minsk plant has also been made responsible for the manufacture of three kinds of gears for the Pavlodar tractor plant. These were previously produced by the Omsk Sibzavod. What is the point of all these long-distance changes?

"The cost of the same parts," explains the author, "which pass through many hands three times and sometimes even four times is included in the sales volume for all the associated plants. Thus the high rates of increase in output and labor productivity are achieved in the branch in the easiest way. For example, the output of the three gears that were transferred from Sibzavod increased the plant's sales by more than 2 million a year, which provided it with one-third of the growth rate and production volume that were planned for the past five-year plan."

Unfortunately, it is not only crankshafts and gears that are sent on the journey beyond the plan. Thousands of Altay, Pavlodar, Volgograd and Kharkov tractors have been shipped to Berdyansk to the Dormash plant. Scraper and bulldozer devices were mounted on them here, to which the cost...of the tractor was added, and then they sent "their" vehicles to various regions, including cities from which the tractors had been shipped. For more than 10 years the director of Dormash, M. Gubanov, had been suggesting that the scraper and bulldozer equipment be sent directly to the consumers, since the

local shops were capable of installing it. But only after the plant had been changed over to operation according to normative net output was this suggestion adopted.

And they are still shipping tractors, truck tractors and trucks from Minsk, Cheboksary, Kurgan and other cities to the Chelyabinsk plant so that scraper and bulldozer devices can be mounted on them. As a result of this specialization the sales volume at the plant exceeds 280 million rubles, and the normative net output -- or the newly created value -- is little more than 20 million. This kind of specialization is very superfluous for the state, but for the enterprises and the apartments it is especially profitable. The Cheboksary T-330 tractor costs 190,000 rubles, but the price after it has been turned into a fully equipped DZ-94s bulldozer is 217,000 rubles. The expenditures on wages with deductions amount to 1,500 rubles, and profit...15,000.

It goes without saying that this is in no way the fault of specialization. It has been and will continue to be one of the most important directions of technical progress. Nor is the drive of the producers for rubles or money in and of itself to blame. Therefore one absolutely cannot accept the suggestions of certain economists who deny the need for all-around utilization of commodity and monetary relations.[2] It is our conviction that attempts to reevaluate the role of value indicators and oppose them to physical ones are equally ungrounded. The recent article "Tons, Pieces and Rubles"[3] is typical in this respect. It touches on problems that are of principal significance for improving the economic mechanism. But like any other interesting article, it has questionable points which one cannot bypass.

For planning and evaluating the operation of enterprises, associations, ministries and the national economy as a whole, as we know, we use a system of physical (in pieces, tons and meters), value (in rubles) and labor (in hours or norm-hours) indicators. Which of these are more important? The way the question is posed is incorrect in principle. This is the same as asking who is more important, the head engineer, the head agronomist, the head economist or the head physician? Each of these specialists is the chief in his own place! The same thing is true of indicators. Each is the most important in its place. Value, physical and labor indicators cannot be opposed and they cannot augment one another. Therefore the suggestion of maintaining the "leadership" of value indicators seems questionable to us. And here is why.

In theory, all agree unanimously that in a socialist society commodity and monetary relations play a subordinate role, and the rubles reign supreme practically everywhere--from the machine-building giant to the Metalloremont shop. It is generally known that commodities have two properties: consumer value and value. The former is the property of a given thing to satisfy some need of man. And the latter? Value is socially necessary labor that is embodied in a commodity. Production is organized for the sake of satisfying the needs of man, and the less embodied and live labor that is extended for this purpose, the better. To raise value to the first place and transform it into the goal of production is the same as placing the cart before the horse.

It is written in the CPSU program: "The achievement of the greatest results with the least expenditures in the interests of the society--such is the immutable law of economic construction." The "leadership" of value indicators contradicts this. It is precisely their predominance that contributed to the establishment of the expenditure method of evaluating the economic activity of the enterprises: the more material and labor resources that are expended, the better the indicators of their operation and the greater their material incentive. This is how it was figuratively expressed by the general aviation designer, Hero of Socialist Labor O. K. Antonov: "It is especially against the interests of public production to evaluate the operation of enterprises in terms of the amount of expenditures, the mass of expended materials and rubles. This is the same thing as to evaluate the operation of a TETs not in terms of the output of electric energy and heat, but in terms of the quantity of coal that is burned. The more that has been burned, the better it has operated!"[4]

Are Streets and House Numbers Needed on Earth?

Criticizing proponents of physical indicators who "deny the expediency of using value levers and indicators for orientation in the management of the economy," the author of the aforementioned article writes: "Dr of Economic Sciences D. V. Valovoy suggests using norm-hours." The next sentence begins this way: "Dr of Economic Sciences V. M. Ivanchenko denies the importance of value indicators even more categorically."

In this connection one must say that norm-hours are labor indicators and not value indicators. Moreover, I have never denied the expediency of value levers and indicators, but have consistently come out in favor of combining them efficiently with other indicators.[5]

In their attempts to immortalize the dominance of value over consumer value and, consequently, to retain the priority of value indicators over physical ones, the favorite "argument" of this concept is the fact that currently the country produces more than 12 million items. Is it really possible, they ask, to include them all in the plan in physical terms? From this they draw the following conclusion: "For some reason many economists and management experts do not take these figures into account when considering problems of the economic mechanism. And therefore the indicators they recommend cannot be applied directly for the same reason that one cannot find the necessary street and house number on a globe."

In this connection there naturally arises a question: But who needs the names of streets and numbers of houses on a globe? In our search for an answer to this let us turn to economic laws. Let us begin with the law of proportional development of the national economy. Its essence is known. Methods and levers for applying it in practice have been developed. In order to establish a correspondence between the parts of public production one draws up material, labor and value balances which provide for comprehensive coordination of production, distribution and consumption. How are producers informed of them?

Take, for example, the material balance. The production of the most important kinds of products in physical terms necessary for balanced development is distributed among the ministries and departments, and the latter, in turn, approve them for enterprises and associations under their jurisdiction as a mandatory products list. Only complete and prompt fulfillment of this assignment can provide for scientific utilization of the objective law of proportionality. It is no secret that in life we have not yet achieved this. Is the list of many millions of products not the objective reason for the unsatisfactory realization of the law of proportional development? We are convinced that it is not. And here is why.

In the opinion of specialists, for balance in the national economy it is quite sufficient to note on the "globe" of the Gosplan the 500 most important kinds of products. From metal and grain many thousands of the most varied kinds of items ("streets") will be produced. But the absolute majority of the latter interest only producers and the partners who are associated with them in cooperation.

The unsatisfactory situation with respect to the realization of the law of proportionality, in our opinion, is explained primarily by the fact that approximately one-third of the enterprises do not completely fulfill the assignments for prompt output of the most important kinds of products and start-up of new capacities. Under these conditions it becomes increasingly difficult to maintain proportional development. One of the solutions is artificial expansion of the list of products, which is controlled from above. But this solution is illusory and deceptive. If a certain number of "streets" with "houses" marked on them are not promptly constructed, then no matter how hard we try we will still not be able to provide dwelling space for the earmarked number of families.

The failure to fulfill the assignment for the list of products is explained, in our opinion, not by the large number of items, but by the fact that this indicator is only formally the first one in the system of indicators. And in reality? When there is a failure to fulfill the plan in rubles the growth rates of the production volume and labor productivity drop, and the wage fund and deductions into the economic incentive funds decrease. A failure to fulfill the products list does not have an influence on the economic position of the enterprise. The workers can be taken to task or punished for this administratively. Therefore physical indicators have no real power.

The lack of correspondence between the roles of value and physical indicators is manifested even more clearly in the mechanism for the utilization of the basic economic law which reflects the goal of socialist production. What is necessary for more complete satisfaction of the material and cultural needs of the people? As many good and varied consumer goods and objects for cultural and domestic purposes as possible--bread, meat, milk, clothing, footwear, housing, dining rooms, movie theaters, polyclinics, sanatoriums and so forth. In other words, we need consumer values which satisfy certain needs of man. We do not and cannot have the most important kinds of products here.

The main lever for realizing the basic economic law is the indicator of the fulfillment of economic agreements which indicates everything that is necessary for satisfying the needs of the people (they designate not only "street," but also "house numbers"). What goods and kinds of items are specifically earmarked by the consumer and producer, that is, by the parties of the agreement? Are such details really necessary at a level of the Gosplan ("globe")? Of course not! Many of them are not even necessary at the branch level. (Just as the name of a street or the number of a house interests those who live there or are visiting there. The latter can receive the necessary information from a map of the appropriate scale. It is precisely for this reason that simply nobody needs to have the names of streets and the numbers of houses on a globe). Are we really interested in how many thousands of items and kinds of materials "fill up" a sewing machine, television set or automobile? Or how many instruments were used to manufacture them? By no means! What is important for us is their quality, their length of service and...their price.

But what is the situation with respect to the fulfillment of contractual commitments? As a result of the increased role of value indicators envisioned by the economic reform, by the beginning of the 1970's the situation had been aggravated appreciably. The majority of enterprises and associations were successfully fulfilling and overfulfilling the sales plan, but up to 40 percent of them failed to meet their commitments under agreements. And the delivery failures involved primarily inexpensive trivia necessary for daily life. It turned out that for many kinds of products and commodities the growth of the volume in rubles significantly outstripped the actual increase, and for some of them was even accompanied by a reduction in the physical quantities. There was an "erosion" of the inexpensive assortment and an expansion of the expensive one. Therefore, items of which there was previously an abundance began to appear on the list of products that were in short supply. The shortage began to take on quite a different coloring. Previously it included items for whose output there was a limited supply of raw and processed materials. The new "shortage" list began to include inexpensive, but labor-intensive items: needles, threads, buttons, clothespins, socks, shorts, soap, fruit drops, zephyr cloth, crackers and stools, not to mention spare parts for household appliances.

Adopted in 1983 was the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Serious Shortcomings in the Observance of Contractual Commitments for Deliveries of Products and Increasing the Responsibility of Ministries, Departments and Enterprises in This Matter." As a result of the measures that were taken, there was appreciable progress in reducing the volume of delivery shortages. But nonetheless the orders and the agreements for many billions of rubles' worth of products, mainly consumer goods, spare parts and other kinds of inexpensive items, are not being fulfilled. But the sales plan is being fulfilled and overfulfilled, mainly as a result of increased output of expensive items and expansion of repeated accounting for the value of the same items.

Labor Is Measured in Hours

In many commitments the production collectives are obligated to reduce labor-intensiveness. What is it and how is it measured? "Labor-intensiveness," it says in the textbook "Economics of Labor," "is determined in norm-hours and is the actual hours of labor expended on the manufacture of the product." It goes on to explain that the planned wage fund is determined on the basis of the normed labor-intensiveness and the production program in norm-hours and the average weighted wage scale which corresponds to the average category of the workers.

But how can the wage fund be determined when value indicators are predominant? The number of workers is determined on the basis of the achieved production of the volume of the gross output per one worker, taking into account the growth of labor productivity. Then, according to the appropriate methodological instructions, the "calculated number of workers is multipled by their average earnings" and one obtains the planned wage fund. If the overall volume of production in rubles is fulfilled, the collective receives all of the wage fund! It the enterprise has also reduced the output of inexpensive, but labor-intensive, items and has fulfilled the plan through expanding the expensive assortment or increasingly deliveries under cooperation, which has led to a failure to fulfill the assigment for the most important kinds of products and for contractual commitments, no attention is paid to this. Such a "policy" is a serious violation of the objective law of distribution according to the quantity and quality of labor!

The "leadership of value indicators in spite of the objective economic laws leaves for labor indicators a quite insignificant role, and sometimes they are completely "plowed under" in the furrows. And as we know these indicators were valued extremely highly by the founders of scientific communism. The classical works called value accounting an "indirect," "roundabout," "unreliable and inadequate measure." They scientifically justified replacing it in the communist society with accounting directly in terms of working time.

Many enterprises in our country have accumulated rich experience in the utilization of labor indicators. They include the Moscow Dinamo Association and the Andropov Motor Construction Association. In the latter the work of the shops is evaluated directly in norm-hours. Here they have achieved remarkable success in reducing the labor-intensiveness of the products and increasing labor productivity.

But only the first steps have been taken in this direction, and most of the work lies ahead. At the December (1983) Plenum of the CPSU Central Committee it was noted that in recent years we have practically forgotten about the movement for the most rapid achievement of the planned labor-intensiveness of products.

Labor indicators are a most important lever for realizing the law of distribution according to the quantity and quality of labor. They also play an important role in the utilization of the law of value. Is it really possible to determine the base price without properly accounting for labor expenditures? Selective investigations show that every third order for the

approval of new prices has increased labor-expenditures, and sometimes significantly so -- 2 to 3-fold. And, finally, labor indicators are the main level for redistribution according to the quantity and quality of labor which, as we know, is measured in hours and norm-hours.

Pure or "Impure"?

For more than 20 years now there have been arguments revolving around the main (universal) economic indicator. The central issue, asserted I. S. Malyshev, "is the issue of the main indicator." Defending a multitude of indicators, in his opinion, "meant refraining from solving the problem in its essence."[6] We took a negative attitude toward this both then[7] and now. Such a search is similar to the search for the philosopher's stone in the Middle Ages. In our view a universal indicator for measuring the volume and evaluating the work of economic units does not exist, since these functions are directly contradictory.

Physics and chemistry became sciences as soon as precise units of accounting were found. Electricity, for example, became quite admissible for accounting after the establishment of the volt and the ampere. Economics, like any other science, is unthinkable without scientifically substantiated means of measuring the results of economic activity. Such means of measurement as the gross (commodity) output, the volume of construction and installation work, ton-kilometers and commodity turnover in supply and agricultural equipment can be compared with the rubber yardstick: the higher the level of specialization and cooperation--the main direction in the development of scientific and technical progress--the harder this "yardstick" is pulled and the further we remove ourselves from the real production volume. Can there really be reliable calculations on the basis of such means of measurement?

During the process of the establishment of a number of sciences, erroneous views or dogmas prevailed for a certain period. Referring to the dogma of ancient scientists, according to which all planets rotate around the earth, Ptolemy created the geocentric system of the world. It made it possible to determine the position of the planets at any time of the day no less reliably than did direct observations during that period. This was an outstanding achievement of his time. It continued to exist for 1,500 years. Copernicus' discovery that the earth rotated around the sun and its own axis became the basis for the heliocentric system of the world. The former was prescientific, and the latter became scientific.

An economic system constructed on the basis of gross indicators for measuring the results of production activity and evaluating the contribution of individual economic units seems prescientific to me. In industry, for example, the gross output does not correspond to the requirements of scientific substantiated measurement of the value volume since it exaggerates. And the sold output cannot provide an objective evaluation of the economic units since it is constructed according to the principle: the greater the material and labor expenditures, the better the work. Thus the basis of the economic mechanism does not contribute to increasing national economic effectiveness or rationally combining collective and public interests.

As early as the beginning of the formation of the socialist system of management, many economists proved that the gross output was unsuitable for this purpose. In the materials of the All-Russian Statistical Congress which was held in November 1922 it was noted that in "practice there is a prevalence of the random or prescientific approach" to the measurement of production volume. Statistics from concrete material showed that the gross output did not give a real idea of the results that have been achieved since many kinds of raw material and semimanufactured products are used repeatedly. Their conclusion: "Thus the real industrial output, regarded as an item in the balance of the national economy, is the net output of industry." Analogous conclusions are given in the reports and resolutions of statistical congresses, conferences and meetings, which were held regularly during the 1920's. And we have not been able to find a single statement in defense of the gross output.

In August 1924, the chairman of the VSNKh [Supreme Council of the National Economy (1917-1932)] F. E. Dzerzhinskiy spoke at the plenum of the RKP(b) [Russian Communist Party (of Bolsheviks)] and sharply criticized gross output. He said: "When we...calculate the gross output we completely forget about our uneconomical, frankly criminal handling of raw material, fuel and process materials.... According to our calculations the more we discharge into the air the more products we have and the greater the productivity.... Very frequently our petroleum industry, our coal and metallurgical industry and others...work so that others can then discharge their products into the air."[8] In the eighth volume of the first edition of the Great Soviet Encyclopedia it is noted that by calculating the gross output "we remove ourselves from the actual value volume of production and exaggerate it."

Life is showing more and more convincingly that as specialization and cooperation develop, the departure from the actual value volume is accelerating and is reaching an increasingly significant scale. Let us follow, for example, the path of the crankshaft which was mentioned above. From Minsk it is sent to Ural, and from there to the Volgograd Motor Plant; along with the motor it is sent to one of the tractor plants of the country, and then along with the tractor it can go to a plant for road machines where the latter can be transformed into a scraper. As a result, it turns out that the value of the prepared tractor is counted in the sales volume twice, the value of the motor--three times, and that of the crankshaft--five times! And each time the value of the crankshaft has increased as a result of expenditures on loading and unloading, transportation, additional processing and installation. To this one should also add the value of the raw material from which the metal was produced, and that of the iron or steel which is used in the prepared rolled metal.

Deepening of specialization leads to a situation in which many of the items, along their technological path from raw material to the prepared machine which is put into operation, visit a minimum of 2-3 and many -- 5-10 different enterprises. This path is constantly being expanded and lengthened. Is it really correct to include the value of the same items and materials in the production volume so many times? We are convinced that it is not. The production volume obtained this way will be further and further from the actual one.

Since it is impossible to account for this repeated value of items and materials, it is becoming increasingly crucial to replace the gross (commodity) output in this role. With what? As a means of measuring volume, we are convinced, it can be replaced only by one of the variants of net output. "In order not to confuse things by creating useless difficulties," K. Marx wrote, "it is necessary to distinguish gross earnings and net earnings from gross income and net income."[9] As gross earnings he understood the gross output, as gross income--net output, and as net income--added output.

And so, pure or "impure"? ("Impure" is what we shall conventionally call gross, commodity and sold output since, as distinct from pure output, these indicators, along with newly created value, are also included in past labor). Certain economists give preference to "impure" output.

The assertion that the gross approach is the "method of accounting for production which is generally recognized throughout the world" does not correspond to reality. In capitalist countries they use for this purpose indicators that are similar to the conventional net or net output. The gross (commodity) and sold output are purely calculating indicators there. They are used to analyze the dynamics of the structure of production since they take into account material expenditures and place amortization on a separate line. Labor expenditures and profit are taken into account separately.

At the present time, net and conventional net output are being introduced in the CEMA countries. This process is taking place in different and contradictory ways. Apparently some effect is being had by the psychological barrier which was formed during the period of mainly extensive development of the economy when it was required to fulfill the plan at any price, and maintaining high rates of the volume of the gross (commodity) output was essentially a goal in itself.

In this connection, one should devote special attention to the fact that the net output means primarily labor expenditures. And the higher they are, the greater the net output. In order to eliminate the interest in artificially increasing them, it would be expedient to make this indicator not directive, but one which is used for calculation. Moreover, it should not at the same time be the main evaluation indicator as it was during the era of the reign of gross output. The functions of measurement and evaluation are directly contradictory and they should not be joined together. A convincing corroboration of this is the practice of introducing the NChP [normative net output]. Why is it not producing the desired results?

In the first place, everything in the economy is interconnected and mutually conditioned. Introduction of the NChP was envisioned by the well-known decree of the party and government of 1979 concerning the economic mechanism in the complex of measures directed toward raising the level of planning work. The implementation of certain of these measures has not yet been completed. They include, in particular, the formation of the "reserves necessary for proportional and balanced development," the completion of the changeover of "production associations (enterprises) to direct long-term economic ties," and introduction of production capacity certificates of the enterprises.

In the second place, we have retained the method of "average ceiling" determination of the wage fund. Previously for the Mytishchinsk Machine Building Plant it was 8 kopeks per ruble of gross output, and now it is 47 kopeks per ruble of NChP. The actual expenditure of wages depending on labor-intensiveness of the items at many enterprises ranges from 5 to 95 kopeks per ruble of NChP, but an average of say, 50 kopeks has been established for them. And again there has been a formation of advantageous (labor-intensive and highly profitable) and disadvantageous items. If one provides for fulfillment of the assignment for the latter, one can end up without any wages.

In the third place, an essential shortcoming of the NChP is the fact that included in its normatives are various levels of profitability. The minimum and maximum levels of this are in a ratio of 1:2, and sometimes even 1:3. As a result, various quantities and qualities of labor used in the production of items with various levels of profitability create different volumes of normative net output.

A "Clinic System" Is Needed

Imagine that you needed a health checkup. You visit the doctor. Your temperature is normal, your pulse is good, but before issuing a conclusion of "healthy for practical purposes," he asks to have a cardiogram done, orders an analysis and asks you to visit the surgeon, the neuropathologist and other specialists. Then it frequently turns out that a person needs therapy, and sometimes it is urgent. For many patients have normal temperature and satisfactory pulse rates.

Is the evaluation of the multifaceted activity of production collectives really a simpler matter than the determination of the condition of one's health? Anyone who thinks this and tries to find a universal indicator for this is seriously deluded. A system of indicators is needed for an objective evaluation of the operation of enterprises and associations. Figuratively speaking, it is necessary to conduct an annual, and sometimes an extra "health check" of the economic units. For efficient inspection of their operation it is necessary to check both their "pulse" and their "temperature."

One of the most important evaluating indicators should be the sales volume taking into account the fulfillment of contractual commitments. But first it must be made equal to the others. The sales volume should be determined on the basis of the achieved level and should correspond to the overall sum of contractual commitments. Here it is very important when accounting for sales to eliminate the "double bottom"--when commitments under agreements are not met, but the plan for sales is fulfilled. These indicators must be organically combined. The sum of the shortages on deliveries under agreements, as a rule, should correspond to the underfulfillment of the volume of sold products.

As an economic thermometer, which shows whether the process of increasing the newly created output is normal or not, it would be expedient to utilize the net or conventional net output. If an enterprise is not meeting its contractual commitments, it goes without saying that it needs "therapy." But

if it has a strong pulse and the temperature is low? It seems that there is nothing wrong if all the commitments are being met, but as a result of reducing labor-intensiveness or, with the agreement of the client, the more labor-intensive assortment is replaced with a less labor-intensive one. The rates should not be a goal in themselves. This will make it possible to eliminate the race for the ruble and to create more favorable conditions for changing over from the method of planning and evaluating the work of economic units in terms of expenditures to a method that evaluates them in terms of results.

But observance of contractual commitments still does not give an answer to the question: is the plant operating well or not? An answer to this can be given only by a "health checkup," during the process of which it is necessary to clarify the following: How has it utilized production capacities? What is the coefficient of shipped work and the output-capital ratio? Have material and labor resources been utilized efficiently? Have the material-intensiveness and labor-intensiveness of the products decreased? Is the production cost decreasing? Is profitability increasing? What is the quality of the product and are there any complaints? And each of these indicators should be reflected when evaluating the operation and determining the factors and stimuli for encouraging those who are organizing the work well in their area and punishing those who are negligent. Under the conditions of the "leadership" of value indicators, after the fulfillment of the plan in rubles, including the "pure" rubles, the following principle goes into effect: the winners are not judged!

In order to create conditions that are favorable for applying economic laws and efficiently combining public, collective and personal interests, it is necessary to put value indicators "in their place," having made them equal partners with physical and labor indicators. Without this, putting a stop to inefficient and sometimes extravagant specialization for the sake of sales can lead to an artificial decline in the growth rates of production and labor productivity.

In a report at the June (1983) Plenum of the CPSU Central Committee, Comrade K. U. Chernenko discussed stepping up the work for developing modern economic thinking, socialist enterprisingness and a businesslike attitude among Soviet people. Developing this idea in a speech before the electorate on 2 March 1984, he said: "I have spoken of the need for a serious restructuring of the system of management of the economy. It is understandable, however, that improvement of this system can certainly not be reduced to eliminating the shortcomings in the activity, as it were, of managers in their jobs. Something else is equally important: to arrange things so that the initiative and creativity of the broad masses of workers will be revealed in all their fruitfulness and force." The changeover of the economic mechanism to scientific foundations is not a narrow departmental task of economists and specialists. The attention not only of scientists and management workers, but also party and Soviet agencies as well as the means of mass media should be focused on it.

FOOTNOTES

1. PRAVDA, 21 September 1981.

2. We do not intend to deal with this problem here. Our relation to it is laid out in the articles "On the Planned Utilization of Commodity-Monetary Relations", PLANOVOYE KHOZYAYSTVO No 2, 1974; "Another Analysis of Commodity-Monetary Relations Under Socialism", EKONOMICHESKIYE NAUKI No 10, 1974 and in the book "Sotsializm i tovarnyye otnosheniya" [Socialism and Commodity Relations], Ekonomika, 1972.

3. EKO No 9, 1983.

4. "To Plan for Effectiveness", TRUD, 15 January 1981.

5. In the article "On the Further Development of a System of Indicators" the following is written: "The scientific authenticity of labor effectiveness in economic links is provided for on the basis of a complex application of cost, labor and natural indicators which are the most important levers of using the laws, and primarily the basic economic law of socialism". (PRAVDA, 17 August 1976).

6. I S. Malyshev, "Ekonomicheskaya nauka i khozyaystvennaya praktika" [Economic Science and Economic Practice], Ekonomika, 1964, pp 68-69.

7. "Efforts to find a universal indicator, applicable in evaluating the activity of the enterprise, branch and the national economy as a whole, will not be successful. Moreover, it seems to us, there is no particular need for this. In order to plan and evaluate the activity of an enterprise, a system of indicators is needed, and each must be principal and decisive in its own way." (D. Valovoy, "From the Position of the Enterprise", EKONOMICHESKAYA GAZETA No 4, 1965).

8. F. E. Dzerzhinskiy, "Izbrannyye proizvedeniya" [Selected Works], Moscow, Izdatel'stvo politicheskoy literatury, 1977, Vol 2, pp 51-52.

9. K. Marks and F. Engels, "Soch." [Works], Vol 25, part II, p 409.

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PREPARATIONS UNDER WAY FOR ECONOMIC EXPERIMENT

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 95-108

[Article by V. M. Manyukhin, secretary of the Sverdlovsk CPSU Obkom: "All-Around Preparation for the Experiment." Passages in all caps in boldface.]

> [Text] The large-scale economic experiment in expanding the rights of enterprises and increasing their responsibility for economic results, which was begun on 1 January 1984 in two union and three republic industrial ministries, is being continued. It is still too early to speak of its general results. But all stages are interesting to us: the preparation, the first steps, the difficulties and the discoveries. All these are considered in the articles that are offered for your attention. They encompass the experience both of the Mintyazhmash [Ministry of Heavy and Transport Machine Building], the Minelektrotekhprom [Ministry of the Electrical Equipment Industry] and the guidance of preparation in a territorial cross-section--from the example of Sverdlovsk Oblast.

Questions of improving the leadership of economic activity and increasing responsibility for the observance of contractual commitments were raised especially pointedly after the November (1982) Plenum of the CPSU Central Committee. In July 1983 the CPSU Central Committee and the USSR Council of Ministers adopted the decree "Additional Measures for Expanding the Rights of Production Associations (Enterprises) of Industry in Planning and Economic Activity and for Increasing Their Responsibility for the Results of Their Work," and also they began to conduct an economic experiment in branches of the Mintyazhmash and Minelektrotekhprom.

The conditions for the experiment which was started were intended to contribute to improving the economic mechanism in industry, to stimulate the introduction of the achievements of scientific and technical progress and quality and high labor productivity of workers, and to encourage the initiative and enterprisingness of managers and all engineering and technical personnel of enterprises for the sake of increasing the effectiveness of production. These were the tasks that were set for industry by the 26th CPSU

Congress and their importance was pointed out by the February (1984) Plenum of the CPSU Central Committee.

The changeover to working under the conditions of the economic experiment set serious tasks for party and economic leaders of Sverdlovsk Oblast. The fact is that 26 enterprises of the Mintyazhmash and Minelektrotekhprom which are located in our oblast are participating in the new economic experiment which they have been conducting since 1 January 1984. Among them are the largest enterprises of both union branches that are working under the conditions of the experiment.

Restructuring of the Mechanism for Management Within the Enterprises

IN THE PREPARATORY PERIOD IT BECAME OBVIOUS THAT WITHOUT PRINCIPLE RESTRUCTURING OF THE MECHANISM FOR MANAGEMENT WITHIN THE ENTERPRISES IT WOULD BE IMPOSSIBLE TO ACHIEVE SUCCESS IN THE EXPERIMENT. A decision was therefore made to create conditions for preparing for changing over to the experiment in all plants that were participating in it. These commissions included the most competent managers and specialists.

What were the main areas of activity of the commissions?

FIRST OF ALL, A CHANGE IN THE SYSTEM OF INTRAPLANT PLANNING AND CONTROL OVER THE COURSE OF PRODUCTION. Under the leadership of the commission, the Uralmash Association, for example, has developed and introduced into production a new system of intraplant planning and control over the course of production with the help of electronic computer equipment, which is based on cycle schedules for designing and manufacturing machines and equipment. IN KEEPING WITH THE REQUIREMENTS OF THE EXPERIMENT, THE SYSTEM OF INDICATORS FOR EVALUATING THE ACTIVITY OF SHOPS AND SECTIONS HAS BEEN CHANGED. According to the conditions of the experiment, there has been a considerable reduction of the number of evaluating criteria. A great deal more attention has been devoted to the final result of the operation of the enterprise--its fulfillment of contractual commitments. There has been a corresponding change in the group of basic indicators of the activity of individual subdivisions. Thus for assembly shops the main indicator has become the output of products on orders; for the metallurgy and mechanics shops--the manufacture of batching components and parts.

For more effective control over the fulfillment of agreements for deliveries, they are developing comprehensive (combined) plan-schedules for the production and delivery of products which are presented in a single document. They have increased operational control over the fulfillment of daily schedules for the output of both final products and batching components and parts.

It should be noted that at enterprises which are participating in the experiment, the attitude toward the fulfillment of agreements for the delivery of products has changed and become more compulsory and responsible. We ascribe this to the economic work that has been done.

DURING THE PERIOD OF PREPARATION FOR THE EXPERIMENT AND AFTER THE CHANGEOVER TO OPERATION UNDER THE NEW CONDITIONS, THE PLANNING AND ECONOMIC SERVICES OF THE ENTERPRISES ARE PLAYING A LARGER ROLE IN INFORMING THE PERFORMERS OF THE PLANS. The restructuring of the management mechanism fills their activity with new content. They are paying more attention to production. This is observed at those enterprises whose collectives have achieved good results during the first month of the experiment.

The fate of the experiment is being decided by people, and the success of the matter depends on the level of the organization of their labor. Therefore we attach a great deal of significance to improving the work of the brigades and increasing their interest in the results of the labor of each worker. The final result of the work of the shop and the plant depends precisely on the effective work of the brigades. In view of this, it becomes decisively significant to inform the brigades of planning assignments promptly, not only in volume indicators, but also with an indication of the concrete contractual orders. Hence the need to increase the responsibility and efficiency of those workers who answer for the formation of planned assignments for the shifts, sections and brigades. Taking this into account, heavy machine-building enterprises in conjunction with the branch-scientific research institute are constantly searching for ways of further increasing the effectiveness of brigade forms of labor on the basis of extensive introduction of the principles of cost accounting (khozraschet). This is one of the important ways of solving the problem of increasing labor productivity and reducing production costs, which was raised with new force before workers of the country by the December (1983) Plenum of the CPSU Central Committee. We still have serious work to do in this area.

Another area of the work of the commissions is a CONSTANT SEARCH FOR THE POSSIBILITIES OF INTRODUCING THE PRINCIPLES OF COST ACCOUNTING.

There is now a need to create cost-accounting brigades. In principle this is a realistic task. But it is difficult to change them over to cost accounting completely--the shops do not have the necessary measurement instrument for accounting for the expenditure of raw and processed materials, and so forth. Partial cost accounting is possible today, but only in places where the work lends itself to planned accounting.

According to the conditions of the experiment, there are stricter requirements for the promptness of deliveries and the fulfillment of assignments both in the enterprise as a whole and in its subdivisions. And this, in turn, raises new problems in the interactions among services and subdivisions. For example, the task of the metallurgical shops is "separated" from that of the mechanics and assembly shops by 2-3 months, and the brigades--by at least a month. Only then is it possible to seriously raise the question of the brigade contract. This is being slowed down because of the tardy deliveries of raw materials, processed materials and batching items. These difficulties were pointed out in the speech given at the conference of the CPSU Obkom by the general director of the Uralmash Association, Ye. A. Varnachev.

It should be noted that commissions of party organizations for supervising the activity of the administration are properly checking on the course of the experiment. It is necessary to seek out new possibilities of changing all brigades over to payment for labor according to the final result. The course of the experiment is being followed attentively by the CPSU Central Committee and the USSR Council of Ministers. Understanding all the importance of the work for improving the economic mechanism, we shall penetrate into it with all the forces of party influence.

Joining Forces

FROM THE FIRST STEPS IN PREPARING FOR THE CHANGEOVER TO WORK UNDER THE CONDITIONS OF THE ECONOMIC EXPERIMENT, WE HAVE BEEN DEVOTING A GREAT DEAL OF ATTENTION TO COORDINATION OF THE EFFORTS OF THE ENTERPRISES, AND ALSO THE SVERDLOVSK DIVISIONS OF THE USSR GOSBANK AND STROYBANK AND THE TERRITORIAL SREDURALGLAVSNAB ADMINISTRATION. Locally, in the oblast, it will be necessary to resolve quite a few issues that affect the interests of the aforementioned levels of authority.

A large amount of work in preparing for and conducting the economic experiment was done by Sreduralglavsnab. At a series of conferences, managers of organizations and services of the main board received clarification of the essence and tasks of the experiment. There was a meeting with the managers of the head enterprises of the branches. On 20 October 1983 an order was issued for the entire main board, which earmarked the tasks of its organizations and the policy for work with enterprises that were participating in the experiment. The enterprises were informed of this and they accepted it. The responsibility for coordination and solving problems related to carrying out the order in enterprises of the Mintyazhmash was assigned to the first deputy chief of the main board, P. I. Sustavov, and for enterprises of Minelektrotekhprom--to the deputy chief of the main board, A. L. Strakhov.

A policy has been established whereby, in conjunction with the enterprises, each month they consider unsolved problems related to material and technical support for the production plan. Joint conferences with an analysis of concrete situations are held each month. The decisions are documented with the appropriate protocols. The usefulness of these meetings is shown by this fact. Decisions regarding all of the main problems were adopted in four conferences (6 December and 13 January with representatives of enterprises of Mintyazhmash, and 12 December and 14 January--with representatives of enterprises of Minelektrotekhprom).

The main board held a meeting on preparing for conducting the experiment. The implementation of the decisions that are adopted is verified by the chief of the main board at operations conferences which are held twice a month.

On 30 December 1983 an order was issued for all organizations under the main board, which earmarked detailed measures and presented the "methodological instructions for organizing the work for conducting the experiment," approved by the USSR Gossnab, to the associations and enterprises that are participating in the economic experiment. It was suggested that they develop the corresponding measures and submit them for coordination.

One must say that measures have been envisioned for material and moral incentives for workers of the main board to carry out the decisions energetically. Its collective has adopted socialist commitments for 1984 which envision continuous and uniform material and technical supply for associations and enterprises that are participating in the experiment.

The results of the work that has been done are apparent. The funds for material and technical resources that are at the disposal of Sreduralglavsnab have been turned over to the enterprises that are participating in the experiment in the necessary quantities. The production plan was fulfilled in the first two quarters but a miscalculation was made for the program during the second half of the year. Additionally, there are a number of unsolved problems in providing for the annual production program. Thus Sreduralglavsnab did not fully provide the Uralelektrotyazhmash Association with timber materials for packing the prepared products and did not coordinate the deliveries in terms of the time periods for a number of batching items.

UNDER THE CONDITIONS OF THE EXPERIMENT, THE ASSOCIATIONS AND ENTERPRISES HAVE CONDIDERABLY MORE RESPONSIBILITY FOR THE EFFICIENT UTILIZATION OF PRODUCTION CAPITAL. Thus, in addition to the fines for uninstalled equipment and above-normative supplies of commodity and material values not planned by the bank, an additional payment will be exacted in the amount of 3 percent of their value.

Because of the special significance of reserve stocks for the economies of the enterprises, Sreduralglavsnab in conjunction with the enterprises looks over the condition of the production reserves each month and stipulates measures for reducing them. The lists of surplus commodity and material values are published quarterly and they are made available to all enterprises of the country and Soyuzglavsnabsbyt of the USSR Gossnab. As a result, during the nine months of 1983 the Sverdlovsk enterprises of the Mintyazhmash and Minelektrotekhprom sold 5.3 million rubles' worth of surplus commodity and material values.

There are still many problems which will have to be solved locally. These include, for example, providing for more efficient operation of automotive transportation so that everything that is manufactured will be delivered promptly to the consumer. It is also necessary to further improve the joint work of the plants and organizations of Sreduralglavsnab.

Here one can say with satisfaction that as of today Sreduralglavsnab has established a system of monthly and weekly investigation of issues involving material and technical supply of enterprises which are participating in the economic experiment, and this is producing a positive result.

Organizational Party Work

It is taking place in several areas. The party obkom has developed and is implementing a plan of measures for supervising the course of the experiment.

THE LOCAL PARTY ORGANIZATION PLAYS A LARGE ROLE IN CONDUCTING THE EXPERIMENT. In the preparatory period the party organizations strove to inform the shops, divisions, sections and brigades about its provisions. All of the enterprises conducted open party meetings at which they considered the tasks of the collectives under the new working conditions. In the Uralelektrotyazhmash Production Association, for example, they held a conference of the labor collective which approved the new conditions for intraplant socialist competition which were developed taking into account the requirements of the experiment. Unified political days were devoted to changing over to work under the new conditions. On these days the managers of the enterprises spoke before the workers. The same subject was considered in classes in the schools and seminars in the system of economic and political education.

The media have devoted most of their attention to strengthening feelings of responsibility of the workers for the results of the work of the entire collective. "Express-telegrams" have begun to appear more frequently in the shops of the enterprises. They draw the attention of the workers and managers in production to the fulfillment of specific orders within the time periods established by the contracts.

A large amount of work in the labor collectives has been done by the party organization of the Uralmash Production Association. They considered the draft of the plan in detail and at all levels, and they specified the deadlines by which all shops had to deliver batching items and metal within the month and quarter. A meeting of the party and management aktiv was held. One of the commissions of the party committee was reorganized into a commission for control over conducting the experiment. Members of the party committee in conjunction with the administration considered the state of explanatory work in each shop and established supervision over the way in which it is conducted. Even before the association changed over to work under the new conditions each worker knew of the essence of the experiment. NOW THE TASK IS DIFFERENT. IT IS NECESSARY FOR THE WORKERS TO HAVE A SENSE OF THE ADDITIONAL YIELD IN REALITY, FOR THEM TO SEE WHAT THEY WILL HAVE IF THEY ACHIEVE HIGH RESULTS OF THEIR LABOR UNDER THE NEW CONDITIONS.

It is necessary to devote constant attention and to deepen the work that has been started by all the plant services. Therefore, during the time of preparation for the experiment, and now too, a great deal of attention is being devoted to the suggestion of workers, engineering and technical personnel and employees, which are directed toward the improvement of planning, organization of labor, and an economical and thrifty attitude toward the utilization of materials and fuel and energy resources.

Managers Are Awaiting Effective Assistance From The General Planning and Supply Agencies

It does not seem possible to solve all problems involved in the changeover to work under the conditions of the economic experiment. A NUMBER OF ISSUES STILL HAVE TO BE RESOLVED BY THE USSR GOSPLAN, THE USSR GOSSNAB AND THE MINISTRIES.

UNDER CONDITIONS OF THE EXPERIMENT, IT IS VERY IMPORTANT FOR THE ENTERPRISES TO RECEIVE PROMPTLY THE PLANS WHICH ARE BALANCED IN TERMS OF VOLUME AND PRODUCT LISTS, AND TO MAKE SURE THAT THE PRODUCT LIST PLAN CORRESPONDS TO THE ORDERS OF THE CONSUMERS AND THE CAPABILITIES OF THE ENTERPRISE. The plans for the current year which have been assigned to the associations Uralmash, Uralelektrotyazhmash, the plants of Uralkabel', the Sverdlovsk electrical mechanics plant are better balanced with the products list in terms of the volume of products. They managed to solve the main problems of material and technical supply for production at earlier time periods. But they are still not fully satisfying the needs of today.

In order to make well-substantiated orders for material and technical support for 1985 it was necessary to have approved plans no later than February of the current year. But the Mintyazhmash and Minelektrotekhprom have not been in any hurry to do this.

The Ministry of the Electrical Equipment Industry has not solved a number of problems in the Uralelektrotyazhmash Production Association, which is in a difficult financial situation because it does not have enough of its own circulating capital. At the Uralkabel' plant, the plan for the output of individual kinds of products exceeds the production capabilities. The Soyuzelektroagregat All-Union Production Association has not rendered the necessary assistance to the Sysert Electrical Equipment Plant in preparing for work under the conditions of the experiment. The planned volume and list of products does not correspond to the capacities of the plant. This is largely because they have not solved many problems of intraplant production planning here.

As compared to past years, the utilization of capital allotted in 1983 to enterprises participating in the experiment has proceeded satisfactorily. Metal products and certain batching items are exceptions. Let us give some examples.

Because the Uralmash plant did not fill the delivery plan for 1983, there are no carryover supplies. The Dinamo plant (Moscow) failed to deliver 22 DE816 electric engines; 700 AK-11B regulators; 500 MP101-301 electromagnets; and 17,000 AVE-07AS electric engines. The Perm electrical equipment plant is delaying deliveries of electric engines for the production of the Malyutka washing machines. And these enterprises had not begun to deliver this equipment in January of 1984. At the price of serious efforts on the part of the collective, the association nonetheless managed to create the prerequisites for fulfilling the imperfect plan which they received late. The lack of confidence in the possibility of its fulfillment results from the poor delivery of electric engines from the Moscow Dinamo plant and the Perm electrical equipment plant. The Ural turbine engine plant is also irregular in its delivery of diesels.

With the changeover to work under the conditions of the economic experiment, questions of material and technical supply have become more crucial. For example, the funds for metal and engines are allotted quarterly. It is now simply intolerable to have them delivered at the end of the next month. Unfortunately, the plant does not have enough levers for influencing the

suppliers. Fines for late delivery of materials and batching items do not frighten the suppliers. Moreover, they are less than the fines for failing to manufacture the machines. Therefore, the head supplier still remains at a disadvantage.

In December 1983, considerable work was done for utilizing the funds that were allotted for rolled ferrous metals. Thus, as of the situation on 1 December 1983, Uralelektrotyazhmash was underloaded by about 2,500 tons of thin sheet steel, the Uralmash plant--860 tons of thin sheet steel, but from the results of 1983 the amount by which Uralelektrotyazhmash was underloaded was 500 tons, and Uralmash--about 400 tons. But there still is not a fundamental solution to the problem. As of 15 January, the aforementioned enterprises had not been allotted 3,600 tons of rolled ferrous metal (the demand was 74,400 tons), 120 tons of seamless oil pipes (220 tons), 275 tons of rolled pipe (525 tons), 14 tons of thin-walled nonrusting pipe (14 tons), 200 pieces of ingot brass (550 tons), 255 tons of rolled aluminum (the demand--1,630 tons). The funds allotted for gasoline were 28 percent less than last year. Goskomnefteprodukt did not allot Uralmash 50 tons of corebinder. It is possible to add to these examples.

It is known that business executives spend a lot of time and effort solving problems of material and technical support for production and "pledging" funds for metal, materials, fuel and batching items to be received from associates. It is necessary to relieve the managers of these concerns as much as possible so that they can concentrate their attention on the future development of the enterprise, questions of organizing the production and labor of people, reducing expenditures on the output of products, improving their quality, and stepping up control over prompt manufacture and delivery of products under agreements. Our managers are expecting effective assistance in this from the central planning and supply agencies. [Paragraph in boldface]

I think that it is necessary to establish equal responsibility on the part of the supplier of the final product and the supplier of the batching items or materials as well as the consumers and USSR Gossnab agencies for the fulfillment of contractual commitments. [Paragraph in boldface]

Lessons From the First Months of Conducting the Experiment

Of course, it is difficult to obtain appreciable results just during these several months. But what has already been achieved makes it possible to draw the conclusion that the experiment is completely justified. Thus in the first quarter of 1984 as compared to 1983 there was a considerable improvement in the level of fulfillment of deliveries under contracts. It was 100 percent at the Artemovo and Karpinsk machine building plants. For certain other enterprises it was as follows: at the Iskra and Uralkabel' plants and in the Uralmash and Uralelektrotyazhmash production associations it was raised to 98-99 percent and more while in the first quarter of 1983, this indicator was at the level of 94-96 percent.

In order to advance confidently along the path of fulfillment of the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Additional Measures for Expanding the Rights of Production Associations (Enterprises) of Industry in Planning and Economic Activity and Increasing Their Responsibility for the Results of Their Work," it is necessary to draw the proper lessons from the first months of work under the new conditions. In April 1984 the CPSU Obkom convened a conference of the party and economic aktiv of the enterprises that had changed over to work under the conditions of the experiment. The results of their work were analyzed in detail.

What has happened and what tendencies have been revealed? Why are the results of the work of certain enterprises unsatisfactory? As an example, let us take the Sverdlovsk electrical mechanics plant, in whose work serious omissions were revealed in the first months.

First of all, they did not conduct the proper amount of preparatory work. The party commission working at the plant for control over the economic activity of the administration is not supervising the course of the experiment. The plan for the work of the party bureau did not include enough measures that provide for conducting the experiment successfully.

The system of intraplant planning is not oriented toward having the enterprise fulfill contractual commitments. Thus the plant's metallurgical shop sends parts to the storeroom of the assembly shop not in complete sets, but as they are manufactured. Before they are assembled the parts are put together into sets in the warehouse of the assembly shop. They have not envisioned, in keeping with the requirements of the experiment, provisions for socialist competition among subdivisions of the plant. The changeover to the economic experiment has not been reflected in the socialist commitments for 1984.

In preparing for the experiment they have not taken a comprehensive approach to the system of measures. They did not revise the plan for the introduction of progressive technology, mechanization and automation of production for 1984. No special measures were taken to eliminate the "bottlenecks" in production. The work for drawing up a comprehensive plan for the plant's social and economic development was not completed. This was an impediment to the plant's fulfillment of its contractual commitments.

The material incentive of the management of the shops to improve their work are not great enough since the shops have not been changed over to cost accounting (khozraschet).

The shop's economic services are weak. At the present time one person is engaged in economic work in the shop, and he is listed on the organization chart as a technologist. Frequently these people do not have the skills necessary for work under the conditions of the economic experiment.

Work for introducing brigade forms of labor is being conducted poorly. Wages are distributed according to the coefficient of labor participation in only one of the 26 brigades working at the plant. There are no brigades in which payment is made according to the final result, and there are no comprehensive or all-purpose brigades, although the conditions for their creation exist.

The higher organizations have not rendered enough assistance to the plant. Thus the fact that the suppliers of materials are constantly changing makes it impossible to develop long-term ties. In 1984 the Soyuztransformator All-Union Production Association did not allot sufficient funds for completing the construction of residential buildings.

The plant has not been granted independence in utilizing the existing funds for the development of production. Instead of the normative method for calculating the material incentive fund, which was envisioned by the experiment, it is established by directives.

Unfortunately, there are certain shortcomings at other plants as well. There is still a good deal of work to do in order to obtain the maximum effect from the experiment.

The experiment is being conducted with planning assignments for the volumes of production and labor productivity that are greater than they were in 1983. This corresponds to its purposes. The task of the collectives of the enterprises and party organizations consists in providing for their unconditional fulfillment and achieving highly productive and economical work of each enterprise, shop, section and each worker.

And this lies at the basis of the work of the divisions of the CPSU Obkom and the party gorkoms and raykoms which, by the decree of the CPSU Central Committee, are called upon to provide the necessary support and control in conducting the new economic experiment.

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URALMASH DEPUTY DIRECTOR DISCUSSES EXPERIMENT

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 108-115

[Interview with A. S. Osintsev, deputy general director of Uralmash for Economic Problems by EKO correspondent L. Shcherbakova: "Uralmash Under the Conditions of the Experiment"]

[Text] Along with the other enterprises and associations of the Ministry of Heavy and Transport Machine Building, since 1 January 1984 the Uralmash Association has been participating in an economic experiment.

Everyone in our country knows about this enterprise. Its products are used for all start-up projects of the coal, petroleum and gas branches of industry. The equipment produced by Uralmash accounts for 57 percent of the iron in our country, all the transformer and dynamo steel, about 80 percent of the cold rolled sheet metal and all of the solid railroad wheels.

All of the wells deeper than 2.5 kilometers are drilled with our drilling equipment. This equipment is being used extensively in Western Siberia as well. Uralmash includes with the rank of production units a head plant, a scientific research institute and four branch plants. The principle for the organization of production is technological. All of the branch plants work with products from the head plant. They deliver a small proportion of their product to the "outside world": spare parts and nonstandard equipment. The production is unitary by nature.

More than 40 percent of the products are produced with the State Emblem of Quality. The association has extensive ties with foreign consumers. At the present time 12 percent of the products are exported to 33 countries of the world.

The course of the experiment, the advantages of working under the new conditions and the problems that still have to be solved are discussed in a conversation with the deputy general director of Uralmash for economic problems, A. S. Osintsev, and a correspondent from EKO magazine.

[Question] Anatoliy Semenovich, we should like to discuss the concrete changes in the enterprise's activity which are associated with the changeover to working under the conditions of the economic experiment. Shall we begin with planning?

[Answer] First of all, the number of planning indicators was reduced.

There are three basic indicators that appreciably affect the results of the work of the enterprise: product sales taking into account deliveries under agreements, growth of labor productivity, and reduction of expenditures per 1 ruble of commodity output. In the annual cross-section the enterprise is given a plan for the list of items that are produced, for new technical equipment, the proportion of products with the Emblem of Quality, the start-up of capacities and the profit. In the five-year plan, instead of sales under agreements, they give the growth rates of the volume of production in terms of commercial output, and not in terms of normative net output, but labor productivity both in the five-year and the annual plans will be calculated in terms of NChP [normative net output]. The wage normative for industrial production personnel has also been established per 1 ruble of normative net output. That is, this indicator has been retained as a calculation indicator.

And so the main indicator under the conditions of the experiment is product sales, taking into account deliveries under agreements. One must say that our branch, and also the Minelektrotekhprom [Ministry of the Electrical Equipment Industry], has been working in terms of this indicator since 1977. The formation of funds and material incentives for the workers depend on its fulfillment. But up to this point no special progress has been observed. For example, in our association the fulfillment of this indicator has been at the level of 90 percent, and not until 1983 did we reach 93 percent. We see the reason for this in the fact that the entire system of planning and material and technical supply had not been directed toward the achievement of high indicators for the enteprise's fulfillment of contractual commitments. Above all, the plans were not given out promptly and were not balanced with the material and technical resources or capacities.

In connection with the changeover to the experiment, we have restructured the entire system of intraplant planning, orienting it toward the plant's fulfillment of the plan for deliveries under agreements. Now it is required that each shop not simply fulfill the plan for the products list, but 90 percent or more of the overall planned volume must be specific orders that affect the fulfillment of contractual commitments by the plant and association. Only 5-10 percent of the monthly plan, the so-called stock orders, can vary in the shop. When the stock order is not fulfilled because of poor material and technical supply or some other reason that is not related to the work of the shop's collective, then it can take advantage of its right

to use the stock part of its product to fulfill the plan for the production volume, for labor productivity and for production cost.

Therefore, the main orientation is to produce a quite specific volume of quite specific products in each quarter.

Of course there are difficulties here too. In metallurgical production sometimes the more labor-intensive orders all come in the same planning period. As a result, they do not fulfill the plan for volume. But still the "tons" have not died in the country's national economy! All the norms for the expenditure of charge materials are constructed today according to the utilization of each ton of liquid steel. Thus this indicator can "jump": a month--fulfillment, another month--none. The situation is smoothed out by the conditions of the experiment. The main indicator that affects the bonuses for the collective is the fulfillment of contractual commitments.

This is how we have restructured the planning system within the association. Our socialist competition is now directed toward the achievement of the best results in contractual deliveries, growth of labor productivity and reduction of expenditures per 1 ruble of commodity output.

[Question] Does all that has been said mean that Uralmash has no difficulties in fulfilling its contractual commitments?

[Answer] Of course not. It is now already clear that it will be extremely difficult to achieve 100-percent fulfillment of the plan in terms of this indicator in 1984.

Under the conditions of individual production the utilization of capacities cannot exceed 85-90 percent. In some periods the greatest loading of capacities is found in certain sections, while in other periods it is found in other sections. And this cannot always be foreseen ahead of time. We are frequently forced to fill rush orders that are not envisioned by the draft plan. We have always overloaded our presses with a 2,000-3,000 ton-force, and the structure for 1983 and 1984 is such that the press which is in shortest supply--that with a 10,000 ton-force--will be overloaded.

The situation can be improved only if the enterprise is promptly notified of the plan. If we had had the 1985 plan at the beginning of 1984, we could have announced our needs for materials and batching items in March not according to some prognosis, but according to a firm plan which had been substantiated. Then, as was stipulated by the conditions of the experiment, it would have been possible 2 months before the beginning of the year to assign funds to specific suppliers. In this case, by using computer equipment, it would have been possible to discover the bottlenecks promptly, to "widen" them before the beginning of the planning year and to train personnel. This is also important for us what with the shortage of personnel which we are now experiencing. Discussions of planning and its weak places are already going fairly far. We have placed certain hopes in the experiment, but so far we have not seen any changes in the policy or time periods for the development of plans on the part of the planning agencies.

[Question] And when was the association given the plan for 1984?

[Answer] On 9 September 1983. This is approximately a month and a half earlier than in past years, but it is still too late. And the products list was also settled on in the first quarter of the year.

[Question] Anatoliy Semenovich, what changes are envisioned in price setting?

[Answer] A whole number of measures which suit us very well have been envisioned here. First of all, the procedure of price setting itself has been considerably simplified. I have in mind contract prices. Thus when batching items are substituted, without going to the USSR State Committee for Prices or the ministry, we can coordinate the additional charge or reduction from the price with the supplier.

We also need timely measures for developing new prices. They envision an operational solution to production problems. This pertains to the establishment of wholesale prices for semimanufactured products, components for consumption within the ministry, experimental batches, and models of new consumer goods if there are no established prices for them.

When we coordinate with the client, we can establish additional payments to wholesale prices for improvement of products as compared to the existing standards and technical specifications. That is, we have solved a fairly large group of problems that are important for the activity of the enterprise. We feel that the USSR State Committee for Prices is interested in solving them in the areas envisioned by the conditions of the experiment.

[Question] Now about the broad group of problems related to labor and wages.

[Answer] This is a serious problem for us. During the past 8 years the collective of the head plant has been reduced by almost 3,000 people. And there is an absolute reduction of the number of personnel in the association as a whole.

[Question] And what has brought this about?

[Answer] It is hard to say. We have not yet received an answer to this question either from our sociologists or from scientists of the Ural Scientific Center.

On the social plane we are considerably better off than any other plants of Sverdlovsk and Sverdlovsk Oblast. We are constructing more housing than any other enterprises in the city or oblast. We have an adequate network of therapeutic and preventive medical institutions, houses and bases for recreation, and sanatoriums. Each year 70 percent of the workers in the association undergo various kinds of health treatments. The need for kindergartens and day nurseries has been fully satisfied. Our hothouses and subsidiary farms are also quite adequate for us. But there is still an intensive outflow of labor force.

The loss of machine tool operators is especially heavy. We are now losing about 10 people a year. And each year we hire and fire a total of up to 6,000 workers. Hence the low coefficient of shift work of the equipment, which is now 1.46 in machine processing. True, the metallurgical production has stabilized in terms of the number of personnel. Turnover here is only 8-9 percent. The benefits for metallurgists have played their positive role here.

Returning to what has already been said, I shall emphasize once again that in this situation it is especially important for us to have the plan ahead of time so as to prepare properly for its fulfillment.

Of course we are not passively observing the outflow of personnel that is taking place. We are doing everything in our power to operate effectively under the existing conditions. We have envisioned an entire complex of measures. These include, for example, joint efforts of the technical and economic services for improving the machines we produce with a simultaneous reduction of the labor-intensiveness of their manufacture. Well known in the branch is the initiative of the technologist's division which consists in that each engineering and technical worker who is capable of influencing labor productivity has taken on the commitment of reducing the labor-intensiveness of products to an extent that is tantamount to releasing one worker in the shop. The results are manifest. Each year the reduction of the labor-intensiveness of the manufacture of products amounts to 700,000 hours. This also includes work for introducing progressive forms of labor organization--brigade forms, servicing more than one machine, the introduction of standard plants for scientific organization of labor, combining occupations and so forth. Now 73 percent of our workers are working in brigades, and 24 percent of them are working on more than one machine tool.

[Question] What measures envisioned by the experiment help you in this area?

[Answer] First of all, there are the stable normatives for the formulation of material incentive funds and funds for social, cultural and domestic services. While under the preceding five-year plan they ranged from 1 to 0.46 (in the first year of the five-year plan--1, and in the last--0.46), now they are actually stable and they actually motivate the collective to perform highly productive labor. This is a great advantage which is provided by the experiment. In the 1984 plan, the growth of capital is the same as was envisioned for the entire five-year plan. Formation of the material incentive fund has been made directly dependent on a reduction of expenditures on production, and the fund for social cultural and domestic services has been made dependent on the growth of labor productivity. The stability of the normatives forces the managers of all ranks to work better, to reduce the production cost of products and to have a large material incentive fund. The effect from good work is obvious to each worker. We are constantly explaining this in conversations with the workers.

Unfortunately, certain departments have issued instructions for conducting the experiment which practically erase or eliminate the effectiveness of many provisions envisioned in it. Thus the conditions of the experiment envision that if an enterprise fills deliveries under agreements by 100 percent, the material incentive fund is increased by 15 percent. For our plant, for

example, this is a large amount. It is equal to the sum of the annual remuneration. The source for this deduction is profit. And if it is inadequate (the plan was fulfilled by 100 percent and profit by 100 percent), the deductions come from reducing payments into the budget. But we now are seeing instructions from the Ministry of Finance, No 140 of 19 October 1983, in which it is written: "The sum of deductions into the budget from the calculated profit according to the established normative cannot be less than the sum envisioned in the balance of incomes and expenditures...."

[Question] Anatoliy Semenovich, one more question--the material incentive for engineering and technical personnel. How are they taken into account by the new experiment?

[Answer] According to the conditions of the experiment, the bonuses for engineering and technical personnel are allotted under strict conditions and are distributed as follows: 12 percent--for fulfillment of delivery agreements, 6 percent--for fulfillment of the plan for increasing labor productivity, and 6 percent--for planned reduction of production costs. When they fulfill assignments for increasing labor productivity and reducing production costs but the contractual commitments are fulfilled by 98 percent, the guaranteed bonus for engineering and technical personnel for the current results of the work is in an amount of only 16 percent! If the contractual commitments are fulfilled by 97 percent, there is a bonus only for fulfillment of the plan for reducing production cost, that is, 6 percent.

Moreover, for each percentage point of underfulfillment of contractual commitments we reduce the deductions by 3 percent of the funds, and at those enterprises which are not working under the conditions of the experiment, this penalty is one-third as much: 1 percent. That is, we now have incomparably more difficult conditions in this sense.

[Question] Anatoliy Semenovich, how have the material and technical supply agencies restructured their work?

[Answer] In terms of material and technical supply, I think that on the organizational plane they have done the maximum that could have been done in such a short period of time. A decision was made that for the period of the experiment they would give its participants invoices with the stamp "experiment" and these would be the first to be filled. But so far there is no radical restructuring of the work of the supply agencies. Of course, as long as only a small group of enterprises are participating in the experiment, it may be possible to give all of them priority for orders with the stamp "experiment." But by 1986 the number of participants in the experiment will have increased....

I wish to emphasize once again: until we have solved the main problem--prompt, balanced plans--we shall be "stumbling" over it in all the other areas of our activity.

[Question] During the course of the experiment one has been able to see both its strong sides--in the area of price setting and stability of normatives--and certain weak points. This pertains primarily to planning and material and technical supply and the actions of individual departments for meeting the provisions of the experiment. It is probably necessary to have a great deal of motivation and a great deal of responsibility on the part of planning agencies.

[Answer] I absolutely agree with you. We are optimistic and are doing everything we can to make sure that the experiment proceeds successfully. We think that the commission which will sum up its results will draw the appropriate conclusions. Of course it is especially important to have mutual coordination of the work of all levels--from the enterprise to the Gosplan--and they should be oriented toward the plan. We would be fully satisfied with the following provision: to increase the responsibility of those who do the planning, and call strictly to account those who have not fulfilled the balanced plan. Only in this case will the experiment, whose great significance for the country's national economy was emphasized at the February (1984) Plenum of the CPSU Central Committee, proceed successfully.

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ECONOMY IN ELECTRICAL EQUIPMENT INDUSTRY

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 116-124

[Article by A. S. Dzhanoyan, chief of the technical administration of the Ministry of the Electrical Equipment Industry (Moscow): "Variables in the Economy." Passages in all caps printed in boldface]

[Text] The electrical equipment industry has accumulated a certain amount of experience in the system approach to economizing on material and labor resources. During the past two five-year plans, with a 97-percent increase in the output of products, the expenditure of rolled ferrous metals was increased by only 21 percent. Just during the 10th Five-Year Plan, they managed to save more than 300,000 tons of rolled ferrous metals and tens of thousands of tons of copper, lead and aluminum. Planned work for raising the technical level of production under the 10th Five-Year Plan provided for an increase in labor productivity of 23.1 percent. At the same time, the number of workers increased by only 9.5 percent. They conventionally released no less than 200,000 workers.

The electrical equipment industry bears special responsibility in the struggle for economizing on material and labor resources. This is explained by the purpose of the branch, which is called upon to create a reliable technical foundation for electrification. The growth of the electric power supply for labor and, consequently, the savings on working time and material and fuel-energy resources in industrial and agricultural production, transportation and the municipal and domestic economy depend on how completely the country is supplied with generators and transformers, electric engines and cable items, high and low voltage equipment, and a multitude of other kinds of equipment as well as how good all this technical equipment is.

Electrical equipment production is distinguished by high material-intensiveness. In terms of the consumption of rolled ferrous metals it occupies one of the first places among all machine building branches of industry. Moreover, electrical equipment production is the largest consumer of copper, lead and silver, and many items use tungsten, molybdenum, cobalt

and rare metals, and also various kinds of chemical products, cardboard, paper and cotton fabric. Each gram of metal that is saved, like other materials that are in short supply, produces a large economic effect in the production of mass electrical equipment items. Let us give just one example. The designers and technologists who created the 4A single unified series of electrical engines managed to reduce the expenditure of rolled steel, cast iron and copper by 20-30 percent. The economic effect from the use of 10 million of these engines in the national economy exceeded 350 million rubles.

The problem of economizing on materials in the electrical equipment industry is a problem of both quantity and quality at the same time. The branch has been dealing with this for more than 10 years, consistently increasing the role of science in solving problems of effective utilization of material and labor resources and creating energy-saving technical equipment and technologies.

The processes of the development of science, technology and economics interact actively in the electrical equipment industry, and the more rapidly the achievements of scientific and engineering creativity are embodied in items, the higher their technical level, quality and durability, and the more efficiently all branches of the national economy operate. Because of this, as early as 1968 the electrical equipment industry was selected as an object for experimental development of a system of measures that accelerate scientific and technical progress in the branch. Now a comprehensive system has been formed for increasing the effectiveness of branch science, which makes it possible to concentrate the main personnel forces and financial resources on solving the most important national economic problems.

This work began with an ORGANIZATIONAL RESTRUCTURING OF THE BRANCH. They formed 20 large scientific and technical centers for the various kinds of products. They were given responsibility both for carrying out comprehensive branch scientific and technical programs and for creating highly effective products from the products list that was assigned to them. Naturally, these centers are given all the necessary legal authority and means.

The majority of scientific research institutes and design bureaus were transferred over to the direct jurisdiction of industrial enterprises, which played no small role in bringing science and production closer together and deepening specialization and the formation of production and scientific-production associations.

In parallel, the branch introduced a system of ALL-AROUND PLANNING OF SCIENTIFIC RESEARCH AND EXPERIMENTAL DESIGN WORK ON THE BASIS OF SCHEDULE ORDERS which encompass all stages, from the idea to the introduction. Through profit, they have created a unified fund for the development of science and technology which makes it possible to control scientific and technical progress in a new way and to create conditions for changing scientific organizations over to cost accounting. As early as 1978, all scientific research institutes and design bureaus that were parts of the Soyuzelektrotyazhmash All-Union Industrial Association, as an experiment, were given their own circulating capital. Within two years this experiment was extended to the institutes of two other all-union production associations--

Soyuzelektromash and Soyuzelektroizolyator. The rates of realization of scientific developments here turned out to be 1.4 times higher than in other industrial associations. The percentage of incomplete work performed through the unified fund for the development of science and technology decreased.

The new principles for economic incentives for developers, which were dependent on the economic effect obtained in the national economy, were also an important factor.

CONTROL OF PRODUCT QUALITY plays a special role. The electrical equipment industry has been a pioneer and it is no accident that the first items that earned the State Emblem of Quality appeared in precisely this branch. They were the electric engines of the Moscow Electrical Mechanics Plant imeni Vladimir Il'ich and the long-distance cable from the Moskabel' plant.

The point of the systematic work for certifying the quality of all products produced in the branch is to skillfully combine the processes of scientific research, design and technological development of the item, and its assimilation into production with economic measures. Enterprises that have assimilated the effective new product which has been certified to be in the highest quality category receive an increment to the wholesale price for the item.

The output of items in the various quality categories has been placed on a strict planning basis: each all-union industrial association, production association or plant receives planning assignments for increasing the proportion of products that are certified in the highest category, and a corresponding reduction of the output of products that are certified in the second category. During a decade (1970-1980) the sum of incentive increments to wholesale prices for items of the highest quality increased more than fourfold.

As a result of these measures, which comprise the basis for controlling scientific and technical progress in the branch, the time periods for the creation and assimilation of new items have been reduced to two-thirds to one-half the previous level. There has been a marked acceleration of the updating of products--each year about 500 outdated items are removed from production and about the same number of new ones are assimilated. The economic incentive funds for the new technical equipment increased 2.7-fold from 1970 through 1980, and the economic effect from the application of new technical equipment in the national economy during this same period increased more than fivefold. The proportion of items of the highest quality category amounted to 47.3 percent by the end of the 10th Five-Year Plan.

Thus the effectiveness of the system was verified in practice and its main principles have become a constituent part of the well-known decree of the CPSU Central Committee and the USSR Council of Ministers, "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing the Effectiveness of Production and the Quality of Work," which was adopted in July 1979.

Accelerated introduction of the achievements of science and technology into production and the implementation of comprehensive programs were named at the February (1984) Plenum of the CPSU Central Committee as one of the main ways of developing our economy. Work in this area includes a large-scale economic experiment in expanding the rights and increasing the responsibility of enterprises, in which our branch is participating. Acceleration of the rates of scientific and technical progress and the requirements for economizing on material, labor and fuel-energy resources, which are increasing each year, condition the constant search for new forms and methods of increasing the effectiveness of the operation of the branch, which connect more closely the technical and economic strategies of its development.

Under the 11th Five-Year Plan the electrical equipment industry is to assimilate the production of 2,580 new items, remove 2,512 obsolete ones from production, and provide a solid economic effect for the national economy--more than 7 billion rubles. The proportion of products that have been certified in the highest category is to be increased to 51.5 percent. And the main thing is that the branch is to increase the production volume by almost one-third, practically without increasing the expenditure of materials and the number of workers. Moreover, in the branch itself it is intended to save about 400,000 tons of rolled ferrous metals and more than 30,000 tons of rolled nonferrous metals, and to conventionally release no less than 200,000 people. This is considerably more than was saved under the 10th Five-Year Plan. By 1985 labor productivity should have increased by 24.8 percent as compared to 1980.

Such is the task, and its implementation depends today on a large complex of organizational, technical and economic measures which have been formulated in the COMPREHENSIVE BRANCH PROGRAMS FOR ECONOMIZING ON MATERIAL, LABOR AND FUEL-ENERGY RESOURCES. They include concrete assignments for creating light-weight structures, increasing the service life of items and their operational durability, improving technological processes, introducing reduced-waste and waste-free technologies, increasing the coefficient of the utilization of metal, introducing automated control systems for technological processes, and so forth.

Naturally, the drawing up of these programs was preceded by careful development of plans for each scientific research institute and design bureau, and also analysis of the technical and technological capabilities of the production associations and enterprises.

What did this analysis show?

Above all, the fact that the main reserve for economizing on material resources lies in the very process of the creation of new technical equipment, beginning with the stage of research. Not everywhere are developers thinking yet about how to create an item, component or part with minimum expenditures of labor and funds. In order for it to become an absolute rule for each researcher and designer not to begin a new development without having analyzed the progressive domestic and foreign experience that has been accumulated, it was decided that modern analogues were to be studied in each schedule order.

At the same time, the INDICATOR OF THE REDUCTION OF MATERIAL-INTENSIVENESS WAS INCLUDED among the main technical and economic indicators of the item. A strict condition was imposed here: to plan this indicator not simply in comparison with the previously achieved level and not on the basis of a compromise agreement with the consumer, but taking into account the tendencies and requirements of scientific and technical progress.

It was with these requirements taken into account that the plans for each scientific research institute and design bureau were revised, and concrete assignments for reducing the material-intensiveness of the items were introduced into each of them. The assignments were included among the main evaluating indicators that characterize the effectiveness of the work on new technical equipment, right along with the technical level and the quality of the products. Moreover, an item can no longer be placed in the highest quality category if its material-intensiveness does not correspond to the highest world level. Hence all the ensuing consequences in the economic incentives for the collectives.

The FUNCTIONAL COST ANALYSIS (FSA) METHOD is being applied at enterprises of the branch. With its help points where reserves for improvement lie were earmarked in the designs and technological processes. These points are far from always on the surface, and only a careful technical and economic analysis of the design, taking into account all of its functional capabilities, makes it possible to obtain the effect which cannot be achieved with traditional methods of reducing outlays.

In the all-union industrial, scientific-production and production associations of the branch they have created subdivisions which coordinate the work for FSA. The majority of enterprises have organized special services or appointed engineering specialists in FSA. Under the 10th Five-Year Plan, this method was used to save 10,000 tons of rolled ferrous metals and more than 4,000 tons of nonferrous metals. The overall economic effect amounted to 35 million rubles. Under the 11th Five-Year Plan it is intended to achieve an effect of 100 million rubles from the FSA. This method will also play a larger role in increasing the efficiency of production.[1]

Another large reserve for economizing is IMPROVEMENT IN THE STRUCTURE OF PRODUCT OUTPUT. The greatest result is produced by development of a single unified series of mass kinds of electrical equipment. Each series is based on a so-called parametric series which constitutes a base for the unification of components and parts. Figuratively speaking, a well-constructed series includes everything that is necessary and nothing superfluous. It expands the possibilities of introducing mass progressive technology, utilizing the technological equipment efficiently, and, mainly, automating and mechanizing production itself. This has already been proved by the practice of creating and assimilating electric engines of the 4A single unified series which was mentioned above. A single adjustment of the list of items, components and parts produced within the framework of the single unified series and the establishment of unified norms for their utilization produces a large savings on materials and becomes a decisive factor in the creation of automated and mechanized productions. Today the main principle of the branch's technical policy is: not a single new item outside the typical or parametric series.

Here we have come to the stage where the ideas of the designer, technologist and production organizer converge into a unified whole--the stage of the assimilation of new technical equipment. Any material that is safed by the designer on paper fails to become "weighty and visible" if the economical design is not given equally economical technology. And, naturally, any design, regardless of how perfect it may be, cannot produce high final effectiveness if it manufactured by hand or on outdated equipment, and this means that it cannot be included in the highest quality category. The ministry has begun to consistently introduce this provision into practice, reinforcing it with the corresponding economic sanctions.

Practice shows that it is precisely the LEVEL OF TECHNOLOGY AND THE ORGANIZATION OF PRODUCTION that has a special influence on the savings of materials and the effectiveness and quality of labor. Thus cross-wedge rolling, which was introduced at the Perm Electrical Equipment Plant, made it possible to save 215 tons of metal in 1981, and double-row stamping with a checked cutting pattern, which was used at the Kaunass Elektra electrical mechanics plant, saved 695 tons of electrical equipment steel each year. The Dnepropetrovsk electric locomotive construction plant is famous for its high level of organization of production. It has a fully automated shop which is based on machine tools with numerical control and where labor productivity has increased more than threefold during two years of the five-year plan. The Elektrosila Association is successfully using industrial robots, plasma technology and powder metallurgy.

But the certification of the level of technology and organization of production which was conducted at all enterprises showed that it is precisely here that we find the "Achilles' heel" of economizing both on material and on labor resources, and, consequently, increasing the effectiveness of the work of the entire branch. It is here that we find the reasons for the considerable--up to 30 percent--losses of metal and the inadmissibly slow rates of reduction of the proportion of the manual labor.

The technology of electrical equipment production is not only diversified in nature, but it is also extremely specific. The majority of technological processes require special technological equipment and fittings which are not produced in the necessary quantities by a single one of the machine-building ministries. In order to raise the technical level of production, the board of the Minelektrotekhprom [Ministry of the Electrical Equipment Industry] has made a decision--to create its own machine-building base. It has organized the Soyuzelektrotekhnologiya All-Union Production Association, which includes plants for producing special technological equipment which are in operation or under construction.

The results of the certification of the technical level of production lie at the basis of the planned work for improving it. The most critical places, where the proportion of manual labor is especially high, have been revealed. Most of the capital investments and funds for highly productive technological equipment have been directed to these zones.

An important step has been taken toward the development of TECHNOLOGICAL SERVICES FOR PREPARING PRODUCTION. To these ends,the structure of the plans of each scientific research institute and design bureau have been revived and an essential change has been made in the direction of the development of work in technology. It has been established that its proportion in the overall volume of scientific research and experimental design work should amount to no less than 50-60 percent.

Restructuring is very difficult and it entails overcoming serious psychological barriers, but it is extremely necessary. There is apparently now a need to raise the question of creating an institute of head technologists which could not only solve specific problems creatively and on a large scale, but could also create scientific schools and educate highly qualified technological personnel. Let us note in passing that the largest electrical machine-building association in the country, Elektrosila, now includes five Leningrad enterprises where on 1 July 1983 they began experimental development of a new system of wages for technologists and designers so as to increase their interests in creating highly effective technical equipment and technology and in raising the technical level of production.

Each all-union production association in the electrical equipment industry now has planned volumes of scientific research and experimental design work in the areas of technology and the output of special technological equipment. They are intercoordinated with the plans for creating new technical equipment which were envisioned and refined in keeping with the existing system of norming the expenditure of material and labor resources.

The development and introduction of resource-saving designs and technological processes and the creation of comprehensively mechanized shops and sections, flow, automated and semi-automated lines, highly productive specialized technological equipment, and reduced-waste and waste-free technologies--all this comprises the content of the comprehensive target programs under which both the creators of new technical equipment and production organizers are working today.

Within the framework of these programs a series of highly economical items and sets of electrical equipment have been created, whose utilization in the national economy have already produced and in the near future will produce a large economic advantage. For the first time in world practice we have developed a single series of turbogenerators in the range of capacities of 63,000, 125,000, 320,000, 500,000 and 800,000 kilowatts, whose introduction will increase the efficiency factor by 0.1 percent and will reduce the expenditure of materials by 20-25 percent. The set of electrical equipment with a voltage of 1,150 kilowatts which has been delivered for the construction of the Ekibastuz-Ural electric power transmission line is on a high world level. The cost of transmitting electric energy will decrease by 15 percent as compared to the LEP-500 which is now in use. Under comprehensive programs we have created and assimilated explosion-proof equipment for 1,140 volts, which will result in saving on electric energy and copper. Sets of unique electrical equipment for powerful mining equipment, including for excavators with shovels holding 20 and 100 cubic meters, have

been turned over to the national economy. Modern electrical equipment created with the extensive utilization of microprocessor equipment has come to machine building, agriculture, public health and other areas of the economy and the life of the workers.

What are the concrete results of the work of the branch during 1981-1982? During 2 years of the five-year plan we have managed to save more than 165,000 tons of rolled ferrous metals. We have overfulfilled the assignments for economizing on rolled copper, aluminum and brass. Of the materials that were saved, 61.9 percent were the result of improvement of the designs and 31.6 percent--from the introduction of waste-free and reduced-waste technologies. Almost 94,000 people were conventionally released--20,000 more than envisioned by the plan. The proportion of technical factors related to economizing on labor resources amounted to more than 75 percent.

In 1982 labor productivity increased by 6.7 percent as compared to 1980. As a result of the material and labor resources that were saved, the volume of the normative net output increased by 11.7 percent. All of the assignments set for 1983 were also fulfilled. During 3 years of the five-year plan the entire increase in the output of commercial products was provided for with a reduction of the absolute consumption of the basic materials. Scientists, engineers and workers of the electrical equipment industry see the meaning and the final result of their labor in further multiplying these achievements.

FOOTNOTE

1. On the application of FSA [Functional Cost Analysis] in the electrical equipment industry see the selection of materials in EKO, No 6, 1981 (editor's remarks).

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SOCIOLOGICAL SERVICE AT KAMAZ DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 125-137

[Article by A. K. Zaytsev, candidate of philosophical sciences, chief of the division for sociological research of KamAZ (Brezhnev): "Sociological Service at KamAZ"]

[Text] With the start-up of new enterprises not only are national economic problems solved, but new social experiences also accumulated. In this respect the formation, functioning and development of large production collectives always constitute an experiment that has its positive and negative sides. This pertains especially to such gigantic projects as the creation of KamAZ. Today the Kama automotive plant has more than 100,000 workers, and a city of 400,000 has grown up around it. With the creation of such a collective, it took approximately a decade to pass the immense army of workers from all corners of the country through the personnel divisions.

There are tens of thousands of engineering and technical personnel at KamAZ, and only about 3 percent of them do not have a specialized education (practical workers). This is a positive aspect. But we are experiencing severely a unique kind of technocratism--simplistic perception of social problems. In the understanding of a "technocrat" the selection of means of influencing people is simple: raise their wages, give them an apartment and assign them a place in the kindergarten. Then--a garden cottage, a car and a garage....and this is really not his fault. It is more a disservice to him, for he has a desire to rectify the situation but he does not have the skills or ability. Moreover, the regulation of social factors lags behind the control of production and economic activity at the enterprise.

Sociological Activity as an Innovation

In order to produce a practical effect, the sociological service must become an indispensable part of production. Therefore the indicator of the professional competence of the sociologist is his skillful introduction into the mechanism of the functioning of the labor collective.

There was a time when KamAZ sociologists concentrated their attention only on research problems. Their suggestions were only recommendations, their reports were filed away in the "gilded folder" and given a place in the safe. But the sociologist must be an organizer. There are, however, specific features of the organizational functions of the sociological service: when conducting research, drawing up plans for social development and introducing social and engineering developments, the sociologist still acts as a staff worker and a consultant on social management. Note that this does not preclude his advancement to management positions, especially in personnel services. Thus during the past 3 years four bureau chiefs, two deputies and one personnel division chief have come up from the sociological service at KamAZ.

An understanding of the staff role of the sociologist has enabled us to assert that even a developed sociological service is not in a position to resolve independently even a small part of the collective's social problems. Its task is to reveal and predict the subsequent course of social progress, to develop a set of alternative paths for its improvement, and to organize the propaganda and training of members of the collective in methods of influencing these phenomena.

Sociology is a large and--I emphasize--a basic innovation for industry. But if the sociologist is unable to introduce his developments and substantiate his position, there arises a certain psychological barrier which it is difficult to remove.

Therefore KamAZ sociologists have resolved: it is necessary to develop public information about their activity. Here they must have a visible and convincing experiment so that all can see the results "in real life"; they need to change over from simple problems to large social programs and they must be able to persuade executives and party leaders.

A typical feature of the collectives that are being formed is a "thirst" for the new period. Usually at KamAZ in order to introduce one or another applied task developed by sociologists, for example, the system for stabilizing personnel, it was necessary to have approximately a half-hour conversation between the manager of the sociological service and the plant director, after which, without delay, the necessary decisions were made and resources were allotted, and the necessary support was rendered subsequently. Thus there was no misunderstanding.

The 10 years of work experience have enabled KamAZ sociologists to formulate the program for their activity as follows:

to single out the functions of the service (planning-prognosticatory, informational-research, social-engineering, consultative-propagandistic);

to determine the relative significance of the functions. They have brought to the fore the training of managers and members of the collectives on the basis of a course in the fundamentals of social management, and in second place is the study and solution to problems of stabilizing personnel;

to introduce functional and hierarchical specialization of sociologists (to create a bilevel service--the division of sociological research has part of the general directors of the association and sociological groups and plants which includes social planners, social researchers, social mathematicians, sociologists of an engineering profile, technical sociologists and psychologists);

to select the most crucial problem, to analyze it and to try to solve it in one of the collectives, and if it is successful--to disseminate the experience;

to standardize sociological activity (to develop procedures for social management and to clearly define the official duties of the sociologists);

to utilize domestic and foreign achievements (the association is stabilizing personnel on the basis of the experience of the Perm telephone plant, it has studied the method of gathering information without questionnaires used at the Tiraspol Sowing Production Association, it uses the experience of the Magnitogorsk combine in planning the system of personnel activity, and so forth);

to create a situation for the order: not a single research project is conducted without a demand for information from a consumer;

to inform the managers of the results of sociological research and recommendations that have been developed or the experience of other enterprises in the area of social management with the hope of information bulletins, and so forth.

As our experience shows, a sociologist who is oriented not toward the concrete needs of the collective, but toward "pure creativity" can do nothing at the enterprise. The work of the plant sociologist is largely routine and requires stamina, persistence and systematic work. At KamAZ, for example, the well-known method of stabilizing personnel which was first applied at the Perm telephone plant has been in the process of introduction for four years, but it will take at least four years more for it to be fully assimilated.

The introduction of social technology is usually accompanied by conflicts, for example, when the interests of the shop chief and the sociologist come into conflict. And if the sociologist cannot defend his position (and sometimes our division has to defend its rights), sociology will not make its way through for very long in such a collective.

Not a single textbook mentions that when a sociologist of an engineering profile must begin an investigation, he is attacked by a landslide of negative comments, and in a short period of time he knows all of the darker side of the life of the collective. Thus every 10th conversation with newcomers in the association reveals situations of conflict of one degree of severity or another. This creates an immense load on the psyche of the specialist, and sometimes the sociologists cannot withstand it. Therefore one will not be able to do much by looking at the life of plant sociology through "rose-colored glasses," as, incidentally, is also the case with too much fault-

finding. To be able to discern the grains of positive experience, to analyze situations of conflict and to develop and introduce recommendations--these are what sociologists see as their tasks.

The position of the sociological service in the structure of the enterprise depends on the performance of several basic functions.

The Planning-Prognosticatory Function

It consists in providing for the fulfillment of the plan for social development for 5-10 years, developing long-range predictions, and organizing supervision of the fulfillment of the plan and social certification of labor collectives.

The system introduced at KamAZ includes a plan for social development of the entire association for the year and for the five-year plan; plans for individual plants and services of the association (with more than a thousand employees); and the creation of social certificates for collectives of plants, services, shops and divisions (with more than 50 employees).

According to our calculations, it takes about 6 years to put such a system into operation. The collective and its managers must become accustomed to the methods and requirements of social planning. Therefore we are beginning with the most simple form--social certification of the collective. For the first time we gathered certain certificates for almost a year, and the second time--about a half-year; the third cycle, with the introduction of the defense of the social certificate with the "quadrangle" of the subdivision, was conducted for no less than a quarter. Subsequently it is easier to change over to actual social planning. The degree of assimilation of automated methods of gathering social information also affects the time periods for which the periods are filled out.

Information--Research Function

This includes conducting research for documenting the social development, helping management in dealing with bottlenecks, and developing system recommendations and management decisions. Here it is necessary to have efficient actions and short periods of time both for test research and for mass gathering of information with minimum outlays on the part of production, coordination of the actions of the aktiv that is involved, regular delivery of information to the management, and so forth.

What is the significance of sociological information? On the one hand, it makes it possible to establish general patterns, and on the other--local facts. Social processes have their specific features which can be revealed only by the plant sociologist. Thus at KamAZ there are several dozen large collectives but there is no single set of reasons and motives for leaving.

Even now, improvement of social management is impeded by the inadequate study of processes that take place in the collectives and the poor development of applied sociological research. Thus, according to calculations of KamAZ sociologists, complete provision of sociological information for planning developments requires conducting approximately 14 research projects which include up to 50 individual subjects.

With all of the shortcomings of questionnaires, they are still the main means of mining "sociological ore." Moreover, in an extremely large collective this is the only means of formulating social problems and differentiating them for the various subdivisions. And if a single sociologist is not capable of conducting a mass questionnaire (how up-to-date can research be if it continues for 7-8 months or even more?), cooperation among sociologists makes it possible to accelerate the development of programs and research inventory as well as to reduce the field stage (we have experience in questioning 2,000 respondents in 3 days). Since the questionnaires are processed with the help of electronic computers, we do not have the difficulties of correlational and factoral analysis. Moreover, with large volumes of research work, within 2 or 3 years one forms a bank of social information which makes it possible to satisfy a large part of the urgent demands of the association management.

We attach no less significance to the objectivity of the information since only with this objectivity is it possible to formulate correct conclusions and recommendations and separate out misinformation and incompetence from the actual problems of the development of the collective.

A little bit about the tactics of introduction. The production worker, as a rule, is oriented toward the immediate result (according to our investigations, 70-80 percent of the managers run the collectives under so-called "fire" conditions: where something is "burning"--that is where the attention is). This is why they give preference to the study of concrete problems on the basis of expert questionnaires. In these cases, with the help of a simple program, within 3-4 weeks one can place on the manager's desk a list of the social and production problems, which are reinforced by concrete utterances of the respondents. But this does not exhaust all the introduction problems. The very fact of the appearance of the report, regardless of how well-founded and attractive the recommendations expressed in it may be, does not automatically provide a solution to the problem: it is necessary to have help from sociologists and to return to the problems that have been posed, including with the help of new research. It is also important to search for recurrences of the problem.

Let us take, for example, this problem: The thousands of workers at KamAZ live in more than 60 dormitories. Practically all of the workers end up in them during the first year and a half to 2 years while they are waiting for housing. This time coincides with the adaptation period. And it is not surprising that it is precisely the residents of dormitories who commit most of the violations of labor discipline (up to 70 percent) and account for most of the labor turnover (up to 60 percent).

Research conducted as early as 1976-1977 through the efforts of the association's sociological division was devoted to ideological and educational work: questions of the organization, structure and content of the measures that were taken and the activity of the patronage collectives. The data that were obtained reveal the number of factors that have a negative influence on the organization of the work in relation to the place of residence. First, there was a separation and lack of coordination of the actions of the division of workers' dormitories, the committee of the Komsomol complex, the trade union, the Znaniye Society and the patrons in planning and conducting educational work.

In the second place, there was a lack of balance in the large number of measures that were taken (up to 4,000 annually). Lectures and reports accounted for 25.6 percent of them, and debates and parties--only 0.3 percent, although, as a questionnaire showed, these latter kinds of activities are more attractive to young people. Moreover, the specific characteristics of the audience were not sufficiently taken into account. Not enough attention was devoted to indoor forms of leisure and clubs for special interests.

In the third place, the selection of educators was random, and the majority of them do not have special skills or ability to work with an adult population. The solution to this problem undoubtedly goes beyond the framework of the association.

In their recommendations, the sociologists suggested a model annual plan of work in dormitories which has become the basis for comprehensive plans. The social passport for the dormitory, which was also suggested by sociologists, has become a great help in the organization of educational work. The network of clubs for special interests has expanded, and there are now 60 of them.

In 1978, the problem of young specialists with families living in dormitories was subjected to a social study. The fact is that practically all of them left the association without even having worked 3 years. The losses of the collective just during the preceding 3 years amounted to more than 300 people. A survey that was conducted showed that the main reason was that young couples had to live separately. A special dormitory was assigned for specialists with families, and they were immediately given separate rooms. This solution made the association more attractive for this category of workers.

This useful experience was extended to a number of labor specialties in which there is a shortage, and the number of rooms for families reached almost 700 by the beginning of 1983.

The Social Engineering Function

The activity of KamAZ sociologists is related to the development and introduction of technologies for social management. These include both the solution to problems of stabilizing personnel and improvement of ideological activity in the collective. Initially, the sociologists develop the "technological process" of management, then they help to introduce it, and subsequently they exercise control and improve the operations that are included in it.

The system of stabilization of personnel has been developed by the Division of Sociological Research on the basis of the experience of the leading collectives of the country and includes tasks for professional orientation, selection, adaptation, advancement, prevention of violations of discipline and work with people who have left.

With the introduction of the system for stabilization of personnel at the repair and instrument plant of the association, it was discovered that neither the foreman nor the shop chief actually works with people who are dismissed. What can be learned, not to mention be decided, by talking with the person for 3 to 5 minutes? The effect from such meetings is close to zero. Certain directors of plants in the association have tried to take on this problem, sometimes speaking with a candidate for dismissal for up to a half-hour. There was a result, but it is hardly right for the manager to take the place of the personnel worker. Members of the public personnel division, even with all of their energetic work, have changed the minds of a maximum of 5 percent of those who have submitted their resignation.

Taking all this into account, the socialists have begun to talk first with the people who are to be discharged, immediately after they have submitted their resignation. The effectiveness immediately increased: initially up to 25 percent changed their minds, then up to 40 percent, and the figure has not dropped below this (with a maximum of 72 percent). But what happened? The managers of the subdivisions and the personnel workers received precise data about the motivations for leaving which were gathered by sociologists. The conversation upon submitting the resignation, the discussion with the foreman and the work comrades, the meeting with the shop chief, the investigation of the situation and the issuance of recommendations--these are the actions. The sociologist became the main organizer, the staff consultant for eliminating the conflict between the worker and the collective.

These are precisely the kinds of methods of working with people which modern industry needs. Even now we sometimes conduct general edifying conversations when a person is in conflict with the collective for a specific, frequently everyday reason. For example, a dresser has not been allotted yet, or the newcomer is the last to receive instruments, or a young worker, having received his first paycheck, has refused to celebrate this even with his comrades in the brigade in the "traditional way" and they have started to tease him. Every 10th meeting, and sometimes every sixth meeting with newcomers reveals a situation of conflict. Straightening out these conflicts can help reduce by practically half the turnover of workers with a tenure of up to a year and a half (they comprise 42 percent of the people who are dismissed from KamAZ). According to data from the Division of Sociological Research, 50-60 percent of all the problems are resolved at the level of the shop, and 70-80 percent of the causes of turnover are regulated on the scale of the enterprise, and the latter figure is tending to increase.

One of the results of this work is increased demands on the managers of collectives of shops, sections and brigades. Let us give one of the typical situations. Two machine tool operators were discharged at their own request. In a conversation with them, the sociologist finds out the main reason -- a conflict with management. Further study of the situation shows that the actions of the latter were incorrect. Usually the manager's opinion turns out to be decisive. But here, the sociologist comes along and recommends that he apologize to the workers. With the help of public organizations it was necessary to literally force the manager to take measures to rectify his own mistake. As a result, two highly skilled workers did not leave.

It is especially difficult for those managers who regard the latest methods as something artificial and contrived to change over from traditional methods of regulation of social processes to those proposed by sociologists. Sociologists frequently encounter situations in which a person, after receiving recommendations, actively resists them because he is not prepared to receive them and considers them useless and, moreover, harmful.

One of the methods of overcoming such barriers at KamAZ has been conferences on social and personnel problems with the participation of the plant director, which are conducted by the manager of the assocation sociological service. Such conferences are also held at the level of the shop chiefs with the participation of plant sociologists. This makes it possible to raise the level of their competence, to act in unison with the tasks of the subdivision, and to conduct analysis and emergency consultations.

The Agitation and Propaganda Function

This includes training managers and members of the collective in the fundamentals of social management, and workers who are functionally responsible for one or another section of the plan for social development--in the fundamental social planning. Shortcomings in this kind of knowledge and skills among managers of production collectives constitute one of the main difficulties on the path to the introduction of sociology into production. The popular expression "sociological virgin land" is not without significance.

The problem of mutual understanding between the sociologist and the manager seems to be the result of the manager's inadequate knowledge of the fundamentals of social management. One aspect of this problem is the quality of the recommendations proposed by sociologists. But this is only part of the problem. There are not enough books being published on sociology, especially popular ones, and here lies a serious order for writing sociologists. But the most important thing for the plant sociological service is to formulate a "language" of that social organization of which it is the functional element. The manager must understand the requirements and the tenets of the sociologist, something which does not happen of its own accord. Plant sociology is reaping the fruits of clearly inadequate work on the part of the system of higher education, for most of the technical VUZes do not provide even slightly satisfactory training of the specialist in the fundamentals of social management. The only approach is to publicize the achievements of sociology, social psychology and other disciplines in their application to production problems.

This kind of activity requires a ramified sociological service. For example, at KamAZ it is necessary to provide training annually for up to 500 managers, from bureau chiefs and foremen to deputy directors of the plant or administration, 600-800 brigade leaders, approximately the same number of tutors, and so forth. Therefore every one of our sociologists is at the same time a lecturer and an instructor in the branch institute for increasing qualifications. There is no doubt about the justification for the time expenditures. Our experience shows that the "language barrier" disappears after a 60-100 hour course in the fundamentals of social management which is delivered to the managers. But then a completely new problem arises: how to satisfy the sharply growing needs of the managers for sociological and sociopsychological information? But, as they say, if there were only more problems like these.

Recently there have been more and more specialists who have wanted to become familiar with our work and developments. We see in this an opportunity to glean information from our guests as well.

The aforementioned measures are not adequate to introduce sociological recommendations into daily practice. It is also important for the manager to develop the skill of solving daily problems in keeping with these recommendations. And this skill develops only with frequent consideration of typical social problems. To do this it is necessary to train the manager in the fundamentals of the theory of social management, and then, in daily work, to increase the effectiveness of his decisions with the help of individual consultations. It is useful to analyze problem situations at production conferences of various levels which are conducted with the participation of sociologists.

Our Results

Certain figures show the possibilities of a ramified sociological network. Since 1977 sociologists alone have conducted more than 60 different research projects, not including drawing up plans for social development and planning methods; social certification of collectives of plants and administrations has been carried out for 3 years; more than 100 various reference works and a multitude of drafts of decisions and decrees have been prepared; more than 80 information bulletins have been published; a whole series of technical procedures for management have been developed; more than 2,500 managers at various levels have been trained in the fundamentals of social management; and so forth.

The introduction of the system for stabilizing personnel has made it possible to prevent the release of more than 3,500 workers (the economic effect from this alone exceeded tenfold all the expenditures on maintaining sociologists). Having a group of sociologists means eliminating a number of bottlenecks in production.

These results have affected the organizational level and the number of people employed in the sociological service. In 1983 it included a division for sociological research with 22 workers and groups for stabilizing personnel at plants and in services of the association with 19 specialists. The development of the service is continuing.

The KamAZ experience demonstrates the possibility of developing the sociological service at an industrial enterprise under the condition that the requirements enumerated in the article are met within a maximum of 1 or 2 years. Assuming, of course, that the sociologists have a sufficiently high level of qualifications.

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IMPORTANCE OF ECONOMIC TRAINING FOR ENGINEERS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 139-148

[Article by V. D. Kamayev, Honored Scientist of the RSFSR, doctor of economic sciences, professor, and V. I. Postnikov, doctor of technical sciences, professor, Moscow Higher Technical School imeni N. E. Bauman: "Economic Training of Engineers" -- a discussion]

[Text] The role of the economic services is constantly increasing at all levels of the national economy. There has been a correspondingly sharp increase in the training of economists in higher educational institutions. Thus in 1950 10,000 economists were graduated from VUZes (6 percent of the overall graduation of specialists with a higher education) and in 1981 there were already 110,000 (13 percent).

In what direction are they moving now: increasing the proportion of economists in the structure of engineering and technical personnel or increasing the requirements for engineers in the area of economics? Today the role of the engineer in production is changing radically: he is not only a developer, designer or technologist, but also an organizer of labor and production, the immediate one who carries out the party economic policy. Acceleration of scientific and technical progress and utilization of its achievements involve, in particular, the development and output of technical equipment with higher economic indicators, while each new type of machine and technology reduces the expenditures per unit of useful effect. The economic services cannot meet this requirement without the participation of engineers who have not only basic technical training, but also economic training. And their participation is necessary at all stages--from applied research and experimental design developments to the output and operation of the prepared product. The modern engineer, not to mention the manager, no longer has a right to think uneconomically. Unfortunately, up to this point the majority of management workers have only an engineering education.

"An economic education is called upon to contribute actively to the formation of modern economic thinking, socialist enterprisingness and efficiency, extensive participation of the workers in the management of production, the strengthening of discipline, and the development of a general offensive for increasing production efficiency," it is emphasized in the decree of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee of 17 June 1982, "On Further Improving the Economic Education and Training of Workers." Therefore it is important not only to arm VUZ students with a certain sum of knowledge, but also to develop economic thinking in them.

In our opinion, in the Moscow Higher Technical School imeni N. E. Bauman (MVTU) as in other engineering and technical VUZes, economic training which corresponds to the needs of modern production is in the stage of being established. What is necessary for its development?

It seems that in general engineering disciplines (chemistry, physics, resistance of materials, theory of machines and mechanisms, and so forth) it is necessary to use concrete examples to teach the students to approach economically the solutions to scientific and technical problems. For instance, in a course in resistance of materials one material or another should be selected for a beam from the standpoint of how advantageous it is. In a chemistry course it would be expedient to consider the possibilities of reducing expenditures as a result of using less expensive materials and reagents, to justify economically methods of fighting corrosion and to calculate the economic effect that is achieved as a result. When studying special and profile subjects, for example, the course entitled "Design of Machines, Installations and Fittings," the future engineer should be convinced that the selection of one direction or another in the development of this area of technical equipment is determined primarily by economic expediency.

Until recently, the organizational and economic training in VTUZes [higher technical educational institutions] was provided mainly through courses in political economics, economics of the branch and organization, and planning and management of production. In some places an ASUP [automated system for managing production] course was also taught in its organizational and economic aspect. We are speaking only about certain institutes, since the USSR Minvuz [Ministry of Higher and Secondary Specialized Education] does not yet have unified training programs and plans. In the MVTU, for example, this aspect of the ASUP course was taught in only one of the five departments.

Now the methods council of the USSR Minvuz has developed new programs for the courses "Enterprise Management" (including ASUP), "Branch Economics," "Industrial Economics," "Organization and Planning of Machine Building Production" and "Management of a Machine Building Enterprise." It is paradoxical, but in previously existing standard programs no space was given to economic problems. And the students received the necessary information not only for practice, but also for their diploma projects in fragments, from various disciplines.

In certain departments of the MVTU for 3 years now they have been given a new section of the course "Industrial Economics." In the department, "Automation and Mechanization," for example, they discuss technical and economic analysis (including functional-value analysis) of technical systems, questions of quality (including reliability and durability) of the products that are produced; and the machine tools, instruments and technologies that are being developed are compared in terms of their technical and economic parameters. Laboratory projects are carried out using computer equipment.

Improvement of the courses has a positive effect on the economic training of specialists. But a department of political economics and organization of production alone, without the efforts of all departments of the VUZ, cannot completely solve the problem of developing economic thinking in the engineer. This problem is not a new one. Many technical VUZes have repeatedly begun and are carrying out so-called continuous economic (and also mathematical, design and technological) training. What is the main shortcoming we see in it? It is possible to argue about precisely which economic issues should be taught in one course or specialty or another. But it is difficult not to agree with the fact that the material is assimilated more firmly if, say, the reduction of material-, energy- and labor-intensiveness is discussed not only by the economics teacher, but also by the instructor in the department of mathematics or machine parts.

In order to change (on the economic plane) the range of teaching of general engineering and special disciplines, the teachers themselves must have a knowledge of economics. At one time in the higher school they organized a kind of "universal education" in the use of computers, which produced positive results. Today there is a critical need for "universal economic education." How can this be provided? In particular, through daily work of the faculty and training in departments for increasing qualifications. When certifying teachers, perhaps, we should take into account whether or not they have training in economics.

Political economics, of course, has a decisive influence on the development of a Marxist-Leninist world view in the students. But we should not forget that in the VUZ it is the methodological basis both for economics specifically and for economics education as a whole. The level of its teaching, like that of any other science, is determined by the pedagogical personnel. In recent years many new teachers have been added to both economics departments of MVTU. It is very important to have the teachers represent various spheres of economics science and various of its schools.

There are problems whose solutions depend not only on the teachers: we are speaking about textbooks. The fact that textbooks for the social sciences (including political economics) do not meet modern requirements was pointed out in the decree of the CPSU Central Committee, "On Further Improvement of the System for Increasing Qualifications of Teachers of Social Sciences in Higher Educational Institutions." In our opinion, an important reason for this is the lack of differentiation of textbooks for engineering-technical, medical, pedagogical and other kinds of VUZes.

Political economics, like any other science, should be taught taking into account the profile of the VUZ and the professional knowledge of the students. "... The engineer does not come to a recognition of communism in the same way as it was arrived at by an underground propagandist or a man of letters, but through information from his own science, and an agronomist comes to a recognition of communism in his own way, a forester in his own way, and so forth."[1] Much time has passed since the time when V. I. Lenin wrote these lines. The conditions for the study and teaching of social sciences have changed essentially. But Lenin's idea about taking into account the student's profile and knowledge when teaching him social disciplines is undoubtedly still correct, and it must be consistently put into practice.

One must say that several specialized textbooks for technical VUZes have already been published.[2] Attempts have been made in them to take into account the peculiarities of the future activity of the students. For instance, in the training aid edited by Yu. A. Komarnitskiy a great deal of attention is devoted to problems of the effectiveness of capital investments and new technical equipment, the technical and cost structure of socialist production, the limits of the introduction of new technical equipment and other issues that are important to engineers. But they do not meet modern requirements. The June (1983) Plenum of the CPSU Central Committee set the task: "To develop actively a new type of economic thinking which is directed toward initiative and socialist enterprisingness, toward increased responsibility and a creative search for paths that lead to the best final national economic result with the least expenditures."[3] The "profilization" of the textbook should take this requirement into account above all. Let us make clear that we are not talking about replacing the study of political economics with a presentation of the economic policy or a "theory of the Soviet economy" as was the case in the 1930's. A mixing of political economics and applied economics is also precluded. There can be no such thing as "machine building" or "construction" political economics. A textbook in political economics is a unique foundation for all economic training of the future engineer.

Let us stipulate at once that we are approaching the problem from the standpoint of our machine building design VUZ. We are not satisfied by the program and textbook in political economics for noneconomic higher educational institutions (2nd ed., enlarged, Moscow, Politizdat, 1982). In particular, it pays no attention to the unified economic system of socialism. And without it the students of the technical VUZ, having become accustomed to the rigid logic of mathematics, mechanics and physics, perceive political economics abstractly. The laws and patterns in economic life do not turn out to be organically connected. After studying this course the students have no clear idea of the economic system as a whole or of its most essential elements.

The course program and the textbook sometimes consider methodological and theoretical issues separately from the economic policy of the CPSU and the practice of socialist construction. And without this it is hardly possible to transform economic knowledge into conviction, a basis for economic thinking.

Today it is no longer necessary to substantiate in detail the need to increase the effectiveness of production both in the national economy as a whole and during the creation of each new machine or set of equipment. This is problem number one, the strategic line of the CPSU economic policy. But in the textbook and the program there is no special section which presents the essence, the factors and the modern peculiarities of increasing effectiveness. A total of six pages have been devoted to these issues.

The theory of the effectiveness of economics is not taught in courses in applied economics either. Paradoxical as it may be, the future engineer is not given a theoretical foundation for carrying out his major task--increasing the effectiveness of production.

The volumes of output and effectiveness of techniques, the rates of the country's economic growth, and, in the final analysis, the success of socialism in its competition with capitalism depend on how clearly the boundaries of the introduction of new techniques are defined. "Correspondence to the best world and domestic models--we cannot and must not agree to anything less. We must train ourselves for this and we must achieve this, resolutely discarding all that is outdated, unused and devalued by life itself."[4]

The boundaries of the application of new techniques in political economics are studied in sections devoted to capitalist and socialist methods of production, but without sufficient substantiation. The fact is that when defining these boundaries it is necessary to proceed from the dynamics of the profit norm (capitalism) and the dynamics of the effectiveness of production (socialism), and not just from economizing on live labor or current expenditures as a whole. At least it is naive to think that if in a textbook on political economics for future engineers more attention is devoted to the boundaries of the application of machines, the students will not master the methodology of political economic research or will not understand the basic economic law as well. On the contrary, a knowledge of the boundaries of the introduction of machines under socialism will make it possible for them not only to experience more deeply the objective patterns in the development of socialist production, but also to "sense" the scientific substantiation of the party economic policy and that it is a reality for each worker.

What, in our opinion, should the new textbook be like? First and foremost, it should be written in a high ideological and theoretical level, without apologizing for the fact that it is not intended for specialists in the area of economic theory. Students in technical institutes have sufficiently advanced general educational preparation. Political economics is studied in these VUZes, as a rule, after Marxist-Leninist philosophy, as a result of which it is easier to master economic categories and laws. All sections of the textbook should be based on the works of the founders of scientific communism and party documents. The economic system of socialism should be studied from the very beginning of the course.

The textbook should have special sections on the CPSU economic policy, its scientific substantiation and the strategy and tactics for its socio-economic development. Because of these sections, on the one hand, the students will master a certain sum of knowledge, and, on the other, they will acquire a communist world view and a political approach to solving engineering-technical and economic problems. The need for this ensues from Lenin's teaching about the relationship between economics and politics under socialism: prevailing in economics should be a political approach which should be realized from national economic positions.

It seems that the textbook should have chapters that are devoted to the unified scientific and technical policy in its connection with the party economic policy. Then the future engineers will be able to grasp what it is, on what principles it is based, and how it develops. Obviously, this chapter should include the Comprehensive Program for Scientific and Technical Progress envisioned by the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Improving Planning and Stepping Up the Influence of the Economic Mechanism on Increasing the Effectiveness of Production and Improving the Quality of Work." It is also crucial to present the functions, structure and strategies for improvement and the role of each of the elements of the economic mechanism. The three aforementioned chapters will comprise a section of the textbook.

Additionally, the textbook should reveal the problems the engineer will encounter in his daily activity. We have already mentioned some of these when discussing the shortcomings of training aids. And, finally, in order to raise the scientific level of the presentation of economic problems, mathematical apparatus should be used.

An all-union competition has been declared for the best textbook on political economics for a 140-hour course. But the conditions of the competition do not require that the profile of the VUZ be taken into account. As a result, we shall receive once again a textbook which is the same for future engineers, medical workers, philosophers and agronomists ...

And another thing: the question of personnel. Now candidates of economic sciences with the specialty "political economics" are trained in divisions of political economics, in branch VUZes and in applied economics departments of universities, regardless of the scientific potential of the faculty. Engineering and technical VUZes do not participate in the training of these specialists. This can hardly be right. For example, the faculty of political economics of MVTU includes two doctors and more than 20 candidates of economic sciences, there is a section of the Scientific Council of the USSR Academy of Sciences for economic problems of scientific and technical progress in operation there, numerous conferences and symposiums are held, monographs are published regularly, and so forth. And such a faculty does not have the right to train graduate students for their own needs. We do not claim to be able to train them for other VUZes. But we can train our own specialists for ourselves. And this is why. There is a fairly widespread delusion that it is possible to teach political economics "on the run" in a VUZ of any profile. We are convinced: in order to handle this matter well, an instructor in a technical VUZ needs, in addition to a profound knowledge of the subject, an

ideal of machine production, scientific and technical progress, the position of the specific branch in the unified national economic complex, and so forth. It is not difficult to teach a graduate student all of this if he is trained for pedagogical and scientific activity in the VUZ where he will have to work. With this approach there can arise the problem of the participation of graduate students in special seminars and special courses on problems of political economics. It seems that it would not be difficult to resolve it: graduate students can attend them in universities or large economics VUZes in the same city. They could take the examination in political economics, in keeping with the Provisions of the VAK SSSR [USSR Higher Degrees Commission], in the place where they plan to defend their dissertation. Naturally, such an approach is not a universal rule, but when graduate students are being trained for their own VUZ perhaps an exception could be made.

If one proceeds from the notion that the study of economic theory (political economics and courses in applied economics) is an organic part of the training of an engineer, the question of a state examination on economic theory in technical VUZes naturally follows. This would undoubtedly contribute to raising the ideological and theoretical level of teaching of economic theory and the responsibility of the students for studying it.

FOOTNOTES

1. Lenin, V. I., "Poln. Sobr. Soch." [Collected Works], Vol 42, p 346.

2. "Political economics, a course of lectures for correspondence students in technical and agricultural VUZes", Moscow, "Vysshaya shkola," 1963; "Political Economics. Training Aid," ed. by Yu. A. Komarnitskiy, Moscow, "Vysshaya shkola," 1973; "Political Economics. Course of Lectures," ed. by N. S. Spiridonova, Moscow, Izd-vo MGU, 1973; "Political Economics," ed. by P. V. Sokolov, Moscow, Voyenizdat, 1974.

3. Materials of the plenum of the CPSU Central Committee, 14-15 June 1983, Moscow, Politizdat, 1983, p 40.

4. Materials of the 26th CPSU Congress, Moscow, Politizdat, 1981, p 43.

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DIFFICULTIES IN CARGO SHIPMENT DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 149-158

[Article by V. V. Rusakova, candidate of economic sciences, Scientific Research Institute for Price Setting of the USSR State Committee for Prices (Moscow): "Cargoes and Speeds, Losses and Sanctions"]

[Text] The difficulties in shipping cargo depend not only on the work of transportation, but also on other units of the national economy that are associated with it. The overall time periods for the delivery to the consumer of any commodity, even those that are in critically short supply, amount to an average of 3-4 months while the actual travel time is only 5-7 days.[1] The rest of the time goes for accumulating cargo in the warehouse of the manufacturing enterprise and moving it to the mainline transportation, supply bases, and also for storage, sorting and preparation for delivery to the sale points. All this involves loading and unloading numerous times as well as the accompanying operations.

The process of shipping cargo and processing it can be defined as a relay movement of the commodity, whose links are: the cargo dispatcher--transportation--the cargo recipient--the consumer of the product. The main characteristics of the movement of the cargo are speed and--derived from this--promptness of delivery. On the broader plane acceleration of the relay movement of cargo can be reduced to balanced development of all branches of the national economy, including transportation, and to a quantitative reduction of the commodity mass in all links of the relay.

The price of the commodity still does not reflect the total losses to the society which are involved with the location of the goods en route from the producer to the consumer. The mass of commodity values that are frozen during the time of their storage, processing at warehouses and in the state of movement itself is a unique payment made by the society for the concentration of production and the geographic separation of the consumers of the products. This payment is unavoidable, and the amount of it is inversely proportional to the speed of movement of the commodities in the links of the relay. For on the country's railroads alone there are more than 12 billion rubles' worth of products in the process of movement at the same time.[2] This means that to increase the speed of movement by only 1 percent would make it possible to

reduce the production of goods by 120 million rubles or simultaneously to increase the consumption of goods by this same amount. The percentage of reduction of the length of the entire relay cycle for moving commodities, naturally, is even more important.

An interruption in the delivery of cargo that is expected by a specific date is an extremely painful phenomenon since it violates the rhythm of the work of the entire chain of enterprises. Promptness in the delivery of cargo is the final goal, and speed is the means for its achievement which makes it possible in parallel to reduce the commodity mass which is located in the process of relay transfer. One can say with confidence that at the present time speed is essentially the only determining and measurable characteristic of the relay movement of the commodity.

The speed of cargo movement in the relay depends on the speed of its processing and transfer in each stage and in each link. Since the chain of the relay is continuous, the speed in the narrowest link determines the overall speed of the operation of all links. Today the unenviable role of the narrow link is unanimously assigned to transportation, above all rail transportation. But it does not bear the guilt alone, the more so since transportation's share of this process in terms of time is less than 10 percent. There are plenty of bottlenecks in other links as well.

Bottlenecks in the commodity relay are frequently predetermined by decisions made outside the sphere of its effect. Thus there are widely known cases of simultaneous shipping in opposite directions of millions of tons of scrap metal, round timber, unenriched coal, and so forth. More than 23 million tons of ferrous metals are shipped east from the European part of the USSR each year, and 11 million tons are shipped in the opposite direction. Gasoline is delivered from the Mozyr oil refinery to the Baltic area, and this same gasoline is shipped back almost 500 kilometers to the southwest of the Ukraine from the Polotsk plant. Such shipments in opposite directions amount to more than 360 million tons a year.[3] A no less serious problem is the lack of unified technologies for loading and unloading work when handling the same cargoes. The technologies that are being applied hamper one another. This was written about in PRAVDA in an article entitled "When the Cargoes Are En Route."[4] It correctly noted that the "sphere of the infrastructure occupied by the performance of loading-unloading and transportation warehouse work should be regarded as one comprehensive system of the economy for handling cargo, as an integrated sector of the national economy."

A considerable number of published works have been devoted to questions of increasing the speed of deliveries. Some authors relate the speed of the transfer of cargo to radical transformations and the construction and expansion of production capacities, while others rely on improving the planning and organizational bases for management. Both views are correct: improvement of the transportation system is a complex issue. But it is difficult to agree with those who, while correctly speaking about shortcomings in planning, see the source of the problem in the "ton-kilometer" indicator. Academician L. V. Kantorovich was right when he noted: "One cannot try to explain all of the difficulties in the work of transportation brought about by mistakes in planning shipments by just one indicator, in this case cargo

turnover." This indicator is objective and reliable, although, what with the current orientation of production toward the final result, it is no wonder that it has forfeited the dominant role to the indicator of "volume of cargo shipments in tons." But it would be inexpedient to completely reject this volume measurement of the work of transportation.

The decree of the CPSU Central Committee and the USSR Council of Ministers of 28 October 1982, "On Improving the Planning and Organization of the Transportation of National Economic Cargo and Passengers and Stepping Up the Influence of the Economic Mechanism on Increasing the Efficiency of the Work of Transportation Enterprises and Organizations,"[6] obliges us to reduce the normative time periods for the delivery of cargo. In essence it presupposes introducing standards which would make it possible to evaluate the real speed of the relay transfer of cargo. The task is undoubtedly a most important one, although it is very difficult to carry it out. This is hampered by two factors. First, an identical distance of shipment of one and the same cargo with equal volume cannot serve as an objective indicator for unified normative of time for transfer since the organizational and technical conditions for the shipments differ in different areas. Consequently, the standards must be introduced for each pair of points between which communications are possible. The number of these pairs in our country is astronomical. Second, transportation is busier at certain times than it is at others, depending on the seasonal fluctuations in the demand, and, consequently, it has varying possibilities of satisfying this demand. Therefore it will be necessary to differentiate the normatives according to the seasons as well.

Nonetheless standardization must be started in transportation right away. The standards can encompass the basic stable ties and gradually be expanded to include more and more cargoes. But what should be standardized is precisely the complete relay cycle of transfer with a differentiation of the time norms for the various links. Only in this case will the problem of quality (speed) of the transfer of cargo become a specific object of attention. In the final analysis what is important is the overall amount of time during which the commodities are outside the sphere of their purposive circulation, and not just the time during which they are actually being transported.

The production capabilities of the links in the relay chain are far from being fully revealed. For successful realization of the reserves, it is necessary to have economic levers. These levers can be incentive measures for the quality of work and fines. But these levers are frequently incapable of providing for the desired result since they are basically not directed toward specific parties.

It has repeatedly been noted that people have become accustomed to bonuses and sometimes do not even know precisely why they are paid. Fines, to which they have also become accustomed, are even more impersonal. The impersonal nature of the fines is increased by the fact that they have ceased to be an appreciably punitive measure and are only sanctions which reduce the overall fund of remuneration. It is necessary not only to determine precisely in each specific case the absolute amounts of the material remuneration or compensation, but above all to implement the principles of personal motivation and responsibility. Up to this point cases in which the person whose labor

actually provides for the growth of the quality indicator receives a personal bonus are just as rare as are the cases in which the guilty party is fined. Everyone receives a remuneration for individual labor, whose amount--all other conditions being equal--depends on the result of the entire enterprise. But the parties who are really to blame for the failures--just like the successes--are always specific people.

Now the movement of commodities in all stages of the relay chain depends not so much on the existing normatives for the time period for performing individual operations as on the overall level of executive discipline. A reduction of responsibility for the assigned work is a result of the weakening of administrative and economic measures. In this situation many technical innovations turn out to be "powerless" and unable to reveal their effectiveness. "We come up most frequently against a situation," it was noted at the May (1982) Plenum of the CPSU Central Committee, "in which it is not production that is the bottleneck, but the storage and processing of the products and the delivery of them to the consumer." The bottlenecks that have been noted are the result of attitudes toward the process of the delivery of cargo as a secondary problem. The economic manager answers, as they say, with his head for the fulfillment of the production plan. But then what? Then the cargo has many masters in the sphere of the infrastructure, whose responsibility for high-quality shipment of the goods is considerably less than it is for their production. This is always the case when not a single person, but several people from various departments are responsible for a unified comprehensive process.

And what does the system of fines amount to?

For each of the first 6 hours of above-normative idle time of a railroad car that is being loaded, the fine (for the ordinary car) is only 60 kopeks, and after that it increases as the length of idle time increases to 3 rubles per hour when the amount of idle time is more than 18 hours. So it is as though the Ministry of Railways sanctions a "jump" during loading. It is not clear why or for what purpose fines are differentiated according to the length of above-normative idle time. What difference does it make whether a car stands idle for 6 hours four times or whether it stands idle for 24 hours in a row? The economic losses are the same in both cases. But according to the price list, in the first case the sum of the fine is 14.4 rubles, and in the second case--39.6 rubles.

There are various reasons for above-normative idle time: when the idle time lasts for many days it is usually the professional incompetence of the management workers, and with short periods of idle time--the carelessness of the workers and managers of the middle level. One should hardly differentiate the measure of punishment depending on the official rank of the guilty parties.

And so a change in the existing system of fines is a necessity. These fines should be based on a unified normative for each hour of above-normative idle time of a car. Apparently one should use for the normative not 60 kopeks, but the 3 rubles which are exacted with the present system of fines for extremely long periods of idle time. And these fines should be taken from the material

incentive funds of the enterprises. Only in this case will they become an effective lever for improving the quality of relay transfer of commodities as early as the first stage.

The second link in the relay chain for transfer of commodities is the transportation organization. Its work is characterized by the same indicator that inheres in the other two active links of the chain--speed. The only difference is that in the first and third stages of the relay the understanding of speed depends not so much on the actual movement of the cargo as on the time for loading, unloading and other accompanying operations. In transportation speed is associated mainly with the time of movement of the cargoes in space. But transportation (especially rail transportation) also carries out the so-called initial-final operations (accumulation of cars at the designated point, the formation and breakdown of trains, maneuvering and so forth). It is precisely these jobs that occupy a significant position in the process of shipping, both in terms of time and in terms of expenditures. Thus only 22 percent of the overall time for the turnover of cars is spent actually in movement, and the rest is idle time for loading operations and time spent at intermediate and technical repair stations. Therefore the speed of the spatial movement of the cargoes is conditioned by the technical speed of the means of transportation and the organizational and technological methods by which the shipments are carried out. On the country's railroads the speed of the delivery of cargoes is steadily decreasing: during the period from 1965 up to 1980 it decreased from 257 to 208 kilometers per day.[7] This shows that the increased organizational and technical difficulties brought about by the greater mass of cargo that is shipped and a certain arrears in the technical supply for the railroads takes more time than can be saved during movement. With this situation it is more efficient to improve the planning and organizational-technical functions than it is to increase the technical speed potential of the means for transportation, which would involve an essential increase in capital investments and operational expenditures.

The normative speed of movement of cargo on rail transportation is taken into account in the rates--the planned prices for shipment. If the transportation enterprise does not meet the delivery deadline because of factors over which it has no control, it is materially responsible to the cargo recipient.

On the railroads, there is a system of fines in percentages of the shipping cost and depending on the amount by which the established delivery time was missed. Such a system of fines is hardly perfect. The state's losses are proportional not to payments for delivery, but the value of the cargo that is shipped and the specific duration of the delay of their delivery. It therefore seems expedient to change the system of fines and extend it to all those links in the overall relay chain which are guilty of tardy delivery of cargo to the consumer. The fine should reflect the losses from above-normative "freezing" of the mass of commodities in the relay. Its amount should be proportional to the amount of ton-days of delay and the value of the mass of commodities. The value of 1 ton of shipped cargo, naturally, is not always the same. But for fines it is suggested that one use a unified normative because of the following reasons. On the one hand, the guilty party can be any one of the three links in the relay chain, which have differing abilities to pay. A situation can arise in which the fines for failure to

make deliveries, being commensurate with the individual value of the cargo, will turn out to be too high for the guilty party. On the other hand, a low individual value of the cargo can lead to making the fines ineffective. Moreover, the individual value of the cargo that is shipped does not always directly characterize its significance or the effectiveness of its utilization. Costly instruments, machine tools and equipment, for example, can be less economically important in terms of how promptly they are used than inexpensive construction materials, without which it is impossible to start up any facilities, including extremely effective ones.

Thus if one proceeds from the normative coefficient of effectiveness (0.12 for the national economy) and the average price of the cargoes that are shipped (approximately 250 rubles per ton), then the fine for "frozen" goods in the relay will amount to 8.2 kopeks for every ton-day in excess of the delivery time according to the norm. This fine will have to be paid to the cargo recipient, which could be a second sanction (the first fine is the compensation for the losses to the transportation organization). Any link which pays this kind of fine is obligated to pay it into the state budget.

A unified system of fines will stimulate technical and organizational balance of all links in the relay chains, comprehensiveness of the process of transferring commodities and equality of legal responsibility of any participant in the relay cycle to the state for prompt delivery of national economic cargoes.

The nature of the requirements for moving cargoes in the third link of the relay--the cargo recipient--is practically the same as the requirements for the first and second links. Moreover, if the cargo recipient does not himself use the commodities that are received, but when they are unloaded becomes the cargo dispatcher at a local level, these requirements are the same as the requirements for the first link. Therefore the conditions for the proposed system of fines should extend fully to this link.

Improvement of the system of fines will accelerate the disclosure of reserves and will preclude not only shortcomings in planning that are related to the supply of information, but also "interested cunning" in evaluating the work, even if it is only of the sorting stations. The indicators of their work are made directly dependent on the number of cars that are processed. It would seem to be logical, but unless one keeps track of the directions from which the cars have arrived and the directions to which they finally depart, the way is opened up for fabricating the "growth output" for which even the routes are changed. Let us emphasize again: the main thing in any system of fines is that when the fines are paid it is not the fairly large collective pocket that feels the pinch, but strictly the individual one. It is not the entire collective that is guilty, but individual representatives of it. People remember this well when it comes to criminal liability for the theft of even a small sum. So it is even worse to forget about this when the enterprise or the state loses millions.

Only by raising the evaluation and improving the control over the labor of each worker is it possible to expect an effect from any technical or organizational innovations.

FOOTNOTES

1. The figures were determined on the basis of data concerning delivery times for cargo ("Statistika zheleznodorozhnogo transporta" [Statistics of Rail Transportation], ed. by T. I. Kozlov and A. A. Polikarpov, "Transport", 1981, p 146) and data concerning the turnover of circulating capital ("The USSR National Economy in 1980," Moscow, 1981, pp 433, 510).

2. ZHELEZNODOROZHNYY TRANSPORT, No 3, 1982, p 11.

3. Data from the brochure of B. I. Shafirkin, "Reduction of Transportation Expenditures in the National Economy," Moscow, "Znaniye," 1979.

4. PRAVDA, 5 August 1981.

5. GUDOK, 23 December 1980.

6. EKONOMICHESKAYA GAZETA, No 51, 1982.

7. "Statistika zheleznodorozhnogo transporta," Moscow, "Transport," 1981, p 146.

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IMPORTANCE OF FASHION TRENDS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 159-168

[Article by T. I. Savenkova, candidate of technical sciences, PKB [Planning and Design Bureau] of management systems of the ESSR Ministry of Light Industry (Tallinn): "They Judge You by Your Clothing..."]

[Text] What Is Fashion?

"A fool is a person who sees only fashion in fashion."--Balzac

Beautiful and ugly, convenient and inconvenient, long and short, real and artificial--all are fashion...according to the definition in the dictionary by V. Dal', "Fashion--a passing custom, a temporary, changing caprice in daily life, society, the tailoring of clothing and attire." Ozhegov's dictionary gives this definition of fashion: "The totality of customs and tastes that reign in a particular social environment at a particular time; models of objects that correspond to these tastes."

Fashion is multifaceted. But sometimes it is not distinguished from concepts with related meanings--"taste," "style," "standard" and so forth.

The ability to evaluate the beautiful and the ugly through logic and emotion is taste. Tastes originate, develop and disappear, but the general, prevailing taste is fashion. Taste influences the formation of fashion, and fashion, in turn, forms taste.

Style is a more general and stable concept. It depends largely on the change in the way of life, on the economic and social conditions of the environment in which it is formed. Within the boundaries of each style there is a more mobile phenomenon--fashion. The idea of fashion as a standard that equalizes the beautiful and individual is false. Fashion is the art of man's decoration.

Having become a kind of law, fashion requires obedience. But it certainly does not force people to homogeneity. Within fashion trends everyone can select that which suits him and coordinate his individuality with the overall ideal of the beautiful.

It is important to follow fashion not only for man himself and not only because it enables him to dress attractively and with variety; fashion is also of no small importance for production. The output of fashionable goods regulates the production and financial affairs of the enterprises, and in those cases where fashion trends are not taken into account, there is an overstocking of goods. From the economic standpoint, the output of fashionable goods will help to carry out specialization and cooperation, to increase profitability and to save on resources.

In our opinion, fashion is an innovative process which reflects the economic and socio-psychological needs and esthetic tastes and views of the people in the changing of forms and models of consumer goods; it is also a unique indicator and guide to culture.

The degree to which clothing meets the requirements of fashion is a most important criterion of its consumer value and quality. An expert analysis has revealed the persistent demand for attractive, fashionable and varied clothing. Only 10 percent of those questioned preferred sturdy clothing which could be worn for 7-10 years even though it may look old-fashioned.

On what does the demand for clothing depend? First of all, on the monetary funds available to the population. Consequently, the demand exists as a social need expressed in a particular sum of money (see table). But it is not only a matter of funds for payment. Analysis shows that the main reason for the appearance of unmarketable and unsaleable textile goods is the lack of a demand and the population's dissatisfaction with their properties. About 87 percent of the refusal to purchase clothing is because it is not in fashion.

Table. Dynamics of Ratio Between Commodity Supplies in Retail and Wholesale Trade in Industry, and Savings Account Deposits of the USSR Population During 1961-1981, Billions of Rubles *

Years	Commodity Supplies	Deposits	Excess of Deposits Over Commodity Supplies
1961	24.5	11.0	13.5
1965	35.7	18.7	17.0
1970	45.7	46.6	+ 0.9
1975	58.1	91.0	+32.9
1980	67.0	156.5	+79.5
1981	75.4	165.7	+90.3
1982	85.0	174.3	+89.3

* The amount of the deferred effective demand is reduced by the sum of money in the hands of the population. See: "USSR National Economy in 1981," Moscow, "Statistika", 1982.

At one time fashion had to do with social status. But the growing well-being of the people, technical progress, and the extensive democratization of clothing fashions drew all segments of the population into its sphere. The

fashion one sees on the street requires constant attention. In order to satisfy everyone, it must become industrial and give the consumer mass clothing which has the properties of custom-made clothing, it must provide for convenient manufacture of sewn items which do not require alteration, and it must provide high profit for the enterprise.

Fashion and Light Industry

"Smart fashion, our tyrant,
Foe of the latest Russians..."
--A. S. Pushkin

In the offices that deal with assortments in ministries and in the experimental shops of the enterprises one can see beautiful fashionable goods--clothing, footwear, leather haberdashery, and so forth. But when then is the consumer not satisfied? He is bothered by the shortage of fashionable goods in trade, and the production workers are bothered by those difficulties which arrive because of the decreased demand for one item or another, such as we have seen with men's coats and suits, suits for boys, women's coats, coats made of artificial fur and men's jackets.

In addition to light industry, associated enterprises participate in the complex, multistage process of producing clothing, and we have a right to make demands on them as well. We find the same picture year after year at trade fairs: yesterday's materials are used in production, and last year's accessories are purchased. Why?

First, because frequently we do not manage to organize the output of the necessary initial materials in a quantity sufficient for mass series. Second, in the interval between trade fairs for prepared products we almost do not take into account innovations and models of modern accessories; each branch and sub-branch develops absolutely independently. Third, the requirements of trade are frequently based on today's and sometimes tomorrow's demand, but the orientation of production toward the output of fashionable clothing requires prompt replacement of outdated products, coordination of ties among associated enterprises, and efficiency in eliminating unforeseen problems.

Overstocking also arises because of a lack of knowledge of market conditions. Trade does not have enough influence on the formation of the assortment of fashionable new commodities. The Ministry of Trade, which has a powerful system of prognostication, does not help industry in orienting itself toward the demands of the future. Today researchers study the demand for goods that are already being produced when attention should be switched to tomorrow's demand, and they should study not only the commodities, but also the consumer. It is necessary to have information which would reflect the demands of the unknown consumer and would make it possible to differentiate the market.

Wholesale workers have little influence on the preparation of the assortment. They compare the products that are offered for sale with the imported items that come into the bases, which reflect mainly the fashions of the past season. The indifference of the "laws" of our light industry to the recommendations of artist-designers is infectious. It takes years, for

example, to change the widths of trousers or a tie on the conveyor. But abroad, through the efforts of our designers, they wear Russian jackets, boots, tunics, scarves with roses, and so forth--and all because of the fast-operating intermediaries.

Frequently a new item is not necessarily fashionable, since the economic levers do not always work to its advantage. A serious impediment is the practice of price setting whereby the innovation goes through dozens of coordinating levels, and the outdated fashions and models of goods are not marked down promptly or sufficiently. Delaying the markdowns or refusing to mark items down involve losses related to expenditures on storing these goods and the deterioration of their quality as a result of obsolescence or damage.

In order to provide guaranteed sales for a fashionable item, innovations could be "run through" firm stores which study and form the demand, thus fulfilling the plan.

When predicting the needs, the quality of clothing and the technical level at which they are made, the following initial information is necessary:

the directions of the development of fashion;

the market conditions in the past and future;

the technical level of the best domestic and foreign models;

the requirements of the existing standards and conditions;

the present and future raw material base, auxiliary materials and accessories;

the technical support for production.

The Ministry of Light Industry produces various kinds of goods--clothing, footwear, leather haberdashery, and so forth. And the policy for the development, approval, coordination and introduction is different for each sub-branch, and the ties that exist among them are very weak. This pertains especially to ties between the textile and sewing, and textile and knitting branches. Thus sewing factories do not participate in and do not influence the development of fabrics by textile enterprises--even within the framework of the republic. An example from our ministry: Krengol'mskaya Manufaktura has developed fabric for jackets which received a high rating, but the Sangar sewing factory could not even certify the jackets that were manufactured from this jacket.

Artistic and technical councils are oriented toward the requirements of trade which, in turn, direct the enterprises, as we have already said, toward today's demand, and not that of the future. The assortment of the past period is repeated in trade orders, and only the volume changes. There are practically no orders for the future. The study of the demand at the enterprises amount to a clarification of whether or not the assortment developed 2 years ago have been sold.

Therefore, very frequently items which have passed through two artistic and technical councils have received high ratings and have been purchased by the wholesale base are not in demand among the consumers. The enterprise is forced to search for a solution (neither trade nor the houses of fashions bear economic responsibility) since the products must be sold. The assortment is changed in a hurry, and they introduce other items which are not developed either economically or technologically.

Industrial Fashion

"And olden times are obsolete,
And the aged rage for the new..."
--A. S. Pushkin

Today the ESSR Ministry of Light Industry includes 23 associations, combines and factories. The annual volume of gross output amounts to 1.237 billion rubles. In 1983 it produced 186,400,000 square meters of cotton fabrics, 8,045,000 square meters of woollen, linen and silk fabrics, and 20,189,000 knitted and sewn products worth a total of 183.9 million rubles. Having better results than those found in all of USSR industry, the ESSR Minlegprom [Ministry of Light Industry] nonetheless encounters the same problems which we have just discussed.

For clothing it is necessary to have a friendly alliance of art, industry and economics, so that the economic value will correspond to the esthetic merits, since to ignore fashion, in the final analysis, causes harm to the national economy. Industrial production of fashionable clothing should pursue two goals: the production goal, which ensues from the purpose of the items for mass production, and the consumer goal. One must not forget that the "advantage" is determined not only by the technological level of the items that are produced, but above all by how they satisfy the consumers.

Under modern conditions the output of fashionable clothing can also serve to increase the efficiency of labor, to increase the ability of our products to compete on the world market, and to increase the attractiveness of the socialist way of life. Economics, culture, technology and international cooperation should be included in the system of interests of industrial fashion as separate, but interconnected blocks. Only then will we be able to satisfy the needs of each individual for fashionable, attractive and practical clothing.

The life of an industrial fashion consists of two periods: the life cycle of the clothing and the cycle of its production. They differ essentially in structure: the maximum degree of innovation of a product comes considerably earlier than does its assimilation by production. Consequently, the "fashionableness" should become an important factor in controlling the dynamics of production. The life cycle of an item can be extended by modifying the innovation (changing the material, finishings, accessories, finding a new sales market, and so forth).

The process of change in clothing fashion is basically healthy and progressive. A sober understanding of this phenomenon and control of its

development from the standpoint of the esthetic whole, completeness and industrial and economic expediency will make it possible not to reduce to a minimum the number of "victims of fashion," but, above all, to raise the level of production and balance supply and demand.

Many experimental approaches are possible for predicting and coordinating industrial fashion and developing its general direction. Possibly, a coordination center should be created for the fashionable clothing industry. It could generalize the information and coordinate the work of the associated and related ministries. True, there would be the danger of monopolization of the approaches and decisions. But if this could be avoided the work of the coordination center should include three stages, and it should begin 2 years before the sales (the sale season).

The first stage is the stage of conferences. As a result of an exchange of information, the leading specialists (designers and representatives of production and trade) determine the tendencies in the development of fashion with respect to an entire group of questions, beginning with the fiber and the range of colors and ending with the lines of the suit. In order for them to be fruitful, the meetings should be conducted in small groups, approximately 2 years before the sales season.

The second stage is the preparation, development and approval of the directions that have been selected. An esthetic assignment is developed for designing the fabrics. Knitters, textile workers, weavers, chemists, designers and trade representatives participate in the discussion. The range of colors and the nature of the design are developed 18 months before the season under consideration.

The third stage is the final one: the industrial fashion takes on form, concrete details, additions and so forth. Representative of sewing, footwear and accessory enterprises, the leather haberdashery industry, and also stores, wholesale bases, presses and advertising agencies participate in this.

In keeping with this plan, measures are taken for the development of each collection of "autumn-winter" and "spring-summer." The deadlines and time periods for conducting trade fairs (twice a year) are determined taking the seasonal nature of fashion into account.

Joining associated workers into a unified economic organization and their cost accounting [khozraschet] relations will stimulate savings on resources and determine the factors and indicators of the future assortment.

The experiment presupposes the following stages of the work:

investigation of the external situation (observance, gathering and generalization of information, study of market conditions);

the drawing up of orders for production and delivery;

the development and coordination of preliminary planning assignments and limits on raw and processed materials;

planning;

keeping track of sales.

The control and formation of industrial fashion is a continuous process. In order to improve the quality and effectiveness of industrial fashion, it is necessary to combine the efforts and to coordinate the activity of three ministries: Light, Local Industry and Consumer Services.

Enterprises of the ministries of Consumer Services and Local Industry have always rapidly restructured production for fashionable new items: the conditions for supply and price setting have their effect. Therefore the assimilation of small series should begin with them, and the firm stores will sell small series of items from the control collection at the level of semimanufactured products and prepared items. The consumer's reaction, which is made clear during the course of the experiment, should become the basis for alternative decisions.

Cooperation among enterprises of various ministries will make it possible to establish in industrial fashion (as a variant) graduated prices with upper and lower limits. The lower price limit for an item is established on the basis of the conditions for its manufacture at enterprises of the Ministry of Consumer Services. This plan is included in the existing policy for coordinating and setting prices. It makes it possible to establish increments for fashionable items which are offered for the season, and also to reduce prices for unfashionable goods and those that are out of season.

The output of a fashionable new assortment requires, as a rule, a higher level of production, which involves additional expenditures. In order to motivate the enterprises to update the assortment, it is necessary to have sliding wholesale prices, which would facilitate the fulfillment of planning indicators during the period of development and assimilation of the items. The main planning indicators in the output and sales of fashionable clothing should be the sales of the prepared items, the net profit and the net output.

It is necessary to solve the problem of distributing the profit (losses) among the associated enterprises. For example, trade participates in the development of the assortment beginning with the order. But it does not have the opportunity 45 days before the planning period to reject the commodity, and all the responsibility lies on the enterprise which is feverishly trying to restructure production.

Trade participates in the formation of the order, the certification of the product and, if there is a demand for the product, it does not care whether the product needs the GOST [All-Union State Standard] or OST [All-Union Standard], in which there are sometimes too many regulating parameters and normatives which impede the output of a fashionable item. We should also simplify the technical specifications for the item. It is obviously necessary to envision greater economic incentives for scientific-technical and administrative activity for the output of fashionable items.

At the present time, there is a large army of product quality controllers who duplicate one another's work. As a result, the responsibility of the manufacturers decreases. For example, the sewing workers check on the quality of the products of the textile workers, and they are also verified by the Gosstandart [State Committee on Standards], the inspection team for trade and commodity quality, departmental organizations, public organizations and so forth. The financial expenditures on maintaining control agencies are unjustifiably great.

A dual system of payment should be observed throughout the entire chain of producer-consumer. The textile worker should receive wages at his own enterprise and bonuses from associated workers--sewing workers and trade; the artist-designer also has dual incentives--from the house of designs and the enterprise. When evaluating their contribution it is necessary to check on the balance of the supply and demand and take into account not only the quantity of products that are produced (for example, in the republic), but also the quantity of products that are imported and exported.

The development of designs and the directive collection of the outfit (clothing, footwear and accessories) should be done in houses of fashions and demonstrated to enterprises, wholesale buyers and the final consumers. The work with the consumer should be started ahead of time and be carried out constantly: announcing the tendencies in the development of the textile industry, prepared clothing and footwear, and familiarizing them with fashionable items. The education of the consumer, the study of the tendencies of his behavior and his ways of making purchases--all these are crucial and constitute a concrete socio-economic task.

I should like to discuss one more reserve--home labor. In industrial fashion it can be used to satisfy an unstable demand, when the prospects for the assimilation of a new product are uncertain. It is necessary to give a certain amount of freedom to home workers and to encourage their flexibility in satisfying local demand.

In order to provide for effectiveness of industrial fashion it is necessary to have various production-economic and organizational structures, information systems, a professional language and instruments. In addition to professional skills and knowledge, specialists must master the methods of expert evaluation and express diagnostics, and they must learn to cooperate.

Unless we take questions of industrial fashion seriously, we will inevitably sustain material and moral losses since it is far from the best examples of Western fashion that enter our country's domestic market and form the taste of the Soviet person.

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STORY ON CONFLICT BETWEEN ENTERPRISE, CONSTRUCTION ORGANIZATIONS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 169-191

[Short story by Vitaliy Zhigalkin (Novosibirsk): "What It Costs Us To Construct a Shop!..."]

[Text] The short story by V. Zhigalkin, "What It Costs Us To Construct a Shop!" interested the editorial staff primarily because of the conflict described in it. The complexity of relations between enterprises and construction organizations gives rise to a whole number of problems whose successful solutions depend on the joint efforts of all "interested parties." For several years V. Zhigalkin was in charge of the Novosibirsk Soyuzvzryvprom Administration. Then he turned to literary work. He is the author of the books "Blaster" and "Administration." He is a member of the USSR Union of Writers.

The short story offered to the readers here considers a situation in which there was no preparation or planning ahead of time for the construction of an industrial facility. It was started in a hurry, according to the well-known principle, "just let it catch on and then everything will be clear...." The material gives us occasion to think about how we should eliminate such conflicts from our lives.

He was young and handsome: tall, blue eyes, dressed fashionably in jeans and a leather jacket. And he had a fashionable name: Jack. Having sat down on the other side of the table and crossed his legs, he looked at Andrey, calmly and intelligently. Andrey had seen him earlier in the courtyard, and from the way in which he indifferently walked past the multi-bay, open mechanics shop on which the gates had not yet been installed, looking only under his feet and walking around piles of iron and crushed stone, he understood that this chap knew everything about the project and that it would not be easy to reach an understanding with him.

Without saying anything, Jack took a package of cigarettes out of his pocket, with a gesture offered one to Andrey, and when Andrey refused, he lit up and hospitably placed the package and the lighter on the table. He had not even opened his mouth, but Andrey already wanted to ask him to leave. And only the fact that outside the window snow was falling softly and smoothly (snow--already!) kept him from doing this. To be sure, the snow melted immediately--and the ground, cluttered with ugly heaps, began to glisten unpleasantly.

"You have probably guessed why I have asked you here?" asked Andrey.

"I have guessed," answered the chap.

"Well, and...?"

"I am ready to listen."

"So you will hear me out? You are looking for a place to work and I would like to help you in this...."

Andrey gave a forced smile. But Jack stretched slowly, and pulling the clay ashtray across the table toward him and, putting his ashes in it, repeated:

"I am listening."

"Did I really not make myself clear?" asked Andrey, still trying to smile. "Or are you not interested in my proposal?"

"Can't we do without the cat and mouse game?"

"Meaning?"

"That we have enough work for today, and we are not asking for your charity, as you depict it."

Suddenly the chap put his cigarette out in the ashtray and pushed it away from him.

"Do you need heating for the entire job?" he asked.

Under his gaze Andrew was forced to nod his head: he sensed that the guest was not a neophyte and saw right through the client.

"And the time periods?"

"The time periods?" Andrew repeated the question, and without even concealing his irritation he waved his hand toward the window. "You mean you cannot see for yourself--the snow is already falling!"

"I see," said the chap. "Ah, so let us talk business: you give me the blueprints and the order today, and within..." he paused for a second and concluded with a great effect--"within 2 weeks you will accept the job. Does that suit you?"

Andrey involuntarily leaned back on his chair and mumbled something about the norm....

"According to the norms the brigade should take a month and a half for this," prompted Jack.

"And payment according to the norm?"

"No. You pay us in cash after you have received the work. One thousand each."

"You have gone mad!" Andrey burst out.

He expected to have to meet any conditions, but this went beyond all bounds.

"You understand," he jumped out from behind the desk. "That is almost all of the estimated cost of the work! You hear--all!"

But Jack's face did not change at all. Without hurrying he took his cigarettes and lighter from the table, placed them in the pocket of his leather jacket, and stood up.

"Well, look around," he said. "The forthcoming frosts do not frighten me." And he started toward the door.

Andrey blocked his way.

"You understand," he said brokenly, gesticulating in front of the chap's face. "I do not have that kind of money! This cannot be done! They will put both of us in jail for this!..."

"There is no cause to put me in jail," Jack answered, undisturbed. "I am a working man. I receive a legitimate order and money for carrying out this order."

"But what about me?" Andrey asked, taking a deep breath. "They can put me in jail for phony orders, can't they?"

"I am not forcing you...."

The chap shrugged his shoulders and lightly pushing Andrey away, went toward the door.

"To hell with you!" Andrey yelled after him.

The work superintendent's room was long and empty: there was only a long table with a smaller one added onto it and chairs along the wall. Andrey paced it from corner to corner and tried to calm himself down.

"No, to hell with him!" he muttered. "To hell with him! Better to let everything fall through and miss all the deadlines! What nerve...but?"

He stopped next to the schedule that was hanging above the table and looked at the end of the dotted line that had almost reached the edge of the sheet--and suddenly with self-hatred he thought about the fact that he would not be able to forget about this line for a minute--neither at work nor afterwards, and it would be worst of all during the night, when he would suddenly wake up and inevitably remember it and would not be able to close his eyes again until morning.

"But it is impossible now!...impossible!" Andrey proved this precisely to someone. "And if I take even one wrong step--that is everything!"

He imagined his head bookkeeper--generally a nice-looking woman--as hiding, rooted to the spot, just like a predator ready to leap--and he even shook his head.

"So this is what I have come to!..."

Cautiously opening the door and looking questioningly at Andrey, a work superintendent, broad as a bear and clumsy, burst into the room.

"Well, what happened?" he asked, sitting down heavily right at the entrance and looking at his boots, which were covered with fresh dirt. "You did not come to an agreement?"

From the work superintendent's behavior Andrey understood that he had been listening to their conversation through the wall, and he was silent.

The snow outside the window hurled down the flakes as if with a purpose, and it became appreciably darker in the office. Both of them turned their attention to this.

"Snow everywhere," the work superintendent muttered. "And then when the freezing begins...."

"Well, and what do you suggest?" Andrey asked sharply.

"You want to and you do not want to, but without heat we cannot begin the finishing work, and it is time for us to put in the equipment...."

"What are you proving to me, that two times two equals four!" Andrey interrupted. "I am asking what you suggest?"

But in response the work superintendent only squirmed on his chair.

Andrey sat down at the table and, taking up the receiver of the telephone, asked the long-distance operator to connect him with Moscow.

"But are they not all asleep there?" the telephone operator asked.

"Yes, they are," confirmed Andrey. "But so what?..."

"Look, do not do too much harm to yourself," she laughed. "Muscovites are a capricious lot...."

But Andrey was counting on the notion that the deputy would be more civil if he were at home than at work in his office. The deputy was an obliging person. And if he were just in the right situation--at the table, or fishing--he would say, "Yes," and later this would be a firm decision.

The telephone operator connected them quickly--in almost a minute--and Andrey did not even have a chance to think of how to arrange the conversation most diplomatically.

"Fedor Alekseyevich, soon I will need an additional wage fund," he hastened to present his concern.

The deputy, a heavy smoker and only half awake, coughed for a long time.

"Andrey Vasil'yevich, I would be glad," finally, actually very politely, as was intended, he answered. "But you know that we have given you all we can. It is much more than the estimate. This would be cheating the others."

"But it is still not enough," Andrey became bolder. "I have been forced to hire savages, and even they want an exorbitant wage!..."

"Andrey Vasil'yevich, let us pretend that I have not heard this. Understand? And, my word of honor, there is nothing we can do."

"Then the facility will probably not make it," Andrey announced, categorically now.

The deputy was silent for a while, possibly thinking about his words, but most likely he was holding himself back: at another time, from his office he would not even have responded to such talk, but would have bellowed. But here he said calmly:

"It cannot fail. The money should be assimilated before the end of the year or else you will let down your comrades such as the administration chief: they will not allot us a single penny for the next year. They will say, you beg and beg and then you cannot assimilate the funds. You understand?"

"Yes, I understand! But do you understand me!"

"Excuse me, Andrey Vasil'yevich, but it is time for me to get ready to go to work. If everything is not clear yet, call me there."

Andrey pondered what could result from a phone call "there" and, having said that everything was clear, put down the receiver.

The work superintendent, slumped on the chair as before, with his legs thrown over it, looked at him expectantly.

The snow was falling ceaselessly outside the window.

Andrey sat down, holding his head in his hands, and then got up decisively.

"In general, that is the way it is," he said. "There is only one solution: we must take the subcontractor by storm once again."

The work superintendent sighed heavily, clearly not believing in the advantage of this measure, but he stood up submissively.

The office of the subcontractor was located on the edge of the village, beyond the old concrete fence, in a long one-story brick building that looks like a cowbarn. The subcontractor engaged mainly in rural construction. Since there were no other specialized organizations in the village, Andrey had to deal with him.

In the courtyard everything was scattered about and worn out. There were deep ruts everywhere, pipes spread out like fans, a heap of heating batteries, valves of various calibers....

"You can come up yourself and take whatever you need," the work superintendent suggested, laughing.

"Yes, at the right time," Andrey agreed gloomily.

The chief of the PMK [local trade union committee], a small, flabby froglike man, was in his office when they arrived. He was sitting at a massive two-pedestal desk and writing. Dissatisfied, even frowning, he stood up and offered his cold, flaccid hand to each in turn, and without sitting down, but looking at the papers on his desk, he crudely declared:

"If you chaps are from the machine shop, I have nothing new for you."

"We have something new for you," Andrey nodded toward the window. "Winter, thank God, is setting in...."

The chief shifted from leg to leg, but did not turn toward the window.

"You will excuse me," he said, "but people from the administration are coming to visit me today and I must prepare myself. I am being threatened with the failure of three projects."

"Counting ours?"

"Yours is the least of my worries. I warned you right away. But if I do not release the veterinary treatment facility and the cowbarn...."

He looked at them with empty, colorless eyes and waited, giving them to understand that the conversation had come to an end, and then he sat down and took up a couple of pieces of paper.

"You will excuse me, please," he repeated.

Andrey, sharply snapping the locks on his briefcase, went behind the desk and, taking out some files, showed him his blueprints.

"You look here...look here!" He pointed his finger to the purple lines on the blueprint. I have here more than a month's delay already. And you were supposed to have given me the work. Understand?"

The chief, his feathers ruffled, listened to everything, and when Andrey stopped talking, he cautiously pushed the blueprint to the side with his elbow and, frowning with concentration, continued to write.

Andrey, having carelessly rolled up the blueprints, put them back in his briefcase and sat down at the extra little desk.

"Listen, Ivan Mikhaylovich," he said in a threatening tone. "When it comes right down to it, I have an agreement with you!"

"And what is that?" the latter answered, without raising his head.

"You know that I can apply sanctions to you!"

"Go ahead. If you do that it will be worse for you than it is for me."

"Yes?!"

"You do not have a profile. They will simply tell me to remove you from the plan."

"Sooo!... And what am I supposed to do in such a case?"

"I have promised you: as soon as I get a chance...."

Andrey threw up his hands hopelessly: of course no "opening" could be seen for the PMK before the beginning of the year.

"Ivan Mikhaylovich, dear," he started to speak with a different, imploring voice. "Put yourself in my place: I must release the project no matter what. I have until the end of the year and after that the plan for the mechanics shop is already a failure. Do you understand?"

But it was as if nothing reached the chief.

"Excuse me, chaps," he answered without looking up from his papers. "But, my God, that is what you call the story about the white steer...."

The work superintendent, as he turned around with a crunching sound in his coarse canvas raincoat, turned up the sleeves and, barely addressing anyone, said:

"It's dinnertime. It is time to go somewhere and have a bite...."

The PMK chief also looked at the clock on the wall and wiped off his broad lumpy bald spot.

"Are you driving?" He finally raised his head.

"Yes," the work superintendent confirmed readily, "Andrey Vasil'yevich is in his Volga. So we can get from one place to the other quickly...."

The work superintendent, covering his face with his hands like a shade, winked at Andrey, hastily stood up and moved his chair.

"But, boys, let us come to an agreement outside," said the chief, still not having stood up. "Not a word about matters in here, okay?"

"But what is there left for me to speak with you about?" Andrey stared at him. "About women?..."

The chief for some reason yawned and remained silent--and then delved into his papers again.

"Okay, leave then," he growled. "I have a sandwich with me."

"What do you mean, a sandwich!" The work superintendent grabbed him. "Do you want to get a bellyache?!" He stealthily showed Andrey his fist. "No sandwiches...let's go! Let us slip out...."

But Andrey could no longer stop.

"To hell with him! Let him slip out.... He has dug himself in and does not want to understand anything!"

"You are the one who does not understand!" the chief snapped. "I have only half the workers I need.... They are all going to savages! Every time I look around I have to fill in some gap...and then there is you!"

The chief snorted excitedly, dug into his papers, and, without saying anything, handed some sort of piece of paper to Andrey.

On the piece of paper was an order from the oblast administration for the work of the PMK. It consisted almost completely of expressions like this: "Devil-may-care attitude toward personnel," "bungling indecision-making," "loss of a sense of responsibility"....

Andrey, looking up from the order, looked at the chief: he sat there, his head bowed as before, running his finger along the leatherette surface of the desk and scratching it so that it made shivers run up one's spine.

Andrew suddenly felt sorry for him and he was about to go up to the chief to sympathetically pat him on the back, but at that very moment it became painfully clear, and he felt as he turned cold that now everything had finally gone to hell.

He stood up and, without saying good-bye, went to the exit.

Andrey was still involved in this construction project last year.

In the spring there was an emergency: they were sending cement, gravel and quarry stone to the north along the rivers to the petroleum workers. They were working on three shifts, without preventive repairs, trying to squeeze in as much as possible during the navigation period. A dense fog hung over the mine for days, like the smoke from a forest fire. Blocks of stone were blown up almost every day and still they did not manage to create the smallest reserve of stone in the mining faces.

And at that particular time suddenly a drilling machine broke down: a gigantic machine which made it possible for several excavators to operate on the mining surface at the same time got tired of the nonsense and dropped a drive rod. And then a second one went dead: the electric engine burned out.

As always, the work superintendent went around with orders to the mechanics shops of the cement plant and to the client. But they had their own emergencies--with the rotating furnace.

"We will take care of our own," they answered, "and then we'll look at yours."

But the loading from the mining faces proceeded at full force, there was no more limestone left, and the situation became critical.

Andrey himself, from the city, called the director of the cement plant:

"Have you people there in the mechanics shop started to divide things into what is yours and what is mine? We are preparing raw materials for you: we are starting to work together and you want to be the boss. We have a common cause. Tell them!"

The director was a new person at the plant, and he apparently did not know the existing practice.

"And do we also share the same profit?" he asked, not even getting into the essence of the problem.

"We are not children," Andrey told him. "You understand very well that more profits is planned for me, and that I do not gain anything from this personally, but give everything to the state."

"I am supposed to turn it over too, but so far this is not working very well for me. And since more profit is also planned for me there is also a greater demand on me, just as on you, and I am forced today to count every penny and not leave anything for anyone else. Please solve your own problems."

"But I am not a private store. I have been working for 40 years in this system. And it has always been friendly, like in a family...."

"We have dozens of machine tools and other machines--and you, excuse me, are you always holding your hand out to us?"

Andrew became offended: the director clearly did not know the existing interrelations between the clients and the subcontractors.

"Well, and what now," he said with restraint, "let us see who is the first one to turn up his toes...."

The director apparently did not understand that there was no point in arguing.

"By God, you will understand me correctly," he said. "Now, when cost accounting is being introduced everywhere, when my ruble--it is my ruble, understand?... In general friendship is friendship, and it does not mean that you have to give people things."

Andrey deliberately did not say anything and replaced the receiver.

It was absurd to send applications to Moscow and the central shops--this would take almost a half-year. He went around first to one repair organization and then to another--but all in vain. Everywhere, as they say, the orders were piling up on top of one another.

And several working faces in the mine had already closed up.

Andrey maliciously awaited the phone call from the plant director--he had even prepared, after having first tired him out by waiting, to give him an instructive speech, but he had unexpectedly taken his complaint directly to the party raykom--and Andrey was told to rush down there.

"Are you aware," he was asked by the second secretary, a dry and rigid man, "what it means to interrupt deliveries to the north?"

Andrey involuntarily ended up in a position of justifying himself.

"I have an agreement with the plant," he was about to explain. "According to the provisions that are in effect, the plant is obligated to repair my equipment, so...."

But the secretary stopped him:

"We are not arbitrators here. Let us do it this way: Which one of you is supposed to deliver the raw material which is now lacking?"

"I am," said Andrey, feeling that he was backed up against the wall.

"So remember: the raw material should be in the working face area immediately. How you arrange this with the cement plant is none of our business. You are the manager and, incidentally, that is what you are paid for! Is that clear?"

The plant director, to be sure, is also obliged to do everything necessary to update the work but after that he completely refused to accept any orders from Andrey.

"No, no and no again," he stated stubbornly. "My ruble is my ruble. There has been too much living on yesterday's credit, and taking from someone else...."

It was obvious that the director was sitting firmly in his chair and was not afraid of taking a risk.

There was the rumor that while he was still working in the ministry he had agreed to go there under the condition that some of the cement that was produced would be used for the needs of his own plant: the construction of the highway and advantageous exchanges with other organizations. This did not seem very plausible, but nonetheless, before spring the director had constructed his own riverport, had covered the docks with concrete, and somehow had managed to arrange with the rayispolkom to increase his mining area at the expense of the sovkhoz fields--something the previous director had been trying to do for almost 10 years.

He was a young chap, strong and energetic, and in meetings with Andrey he always smiled broadly, like the most beneficent comrade. With this same smile he said "no" in the raykom--and one felt that this "no" was final....

And then Andrey understood that he could not do without his own mechanics shop.

At first Fedor Alekseyevich at the main board did not want to talk about this subject:

"Have you ever done any building?"

"No," Andrey answered unconcerned.

Actually, he did not even have any idea of how to approach this matter. Rather, he thought as follows: they would give him the money, he would conclude an agreement with the builders--and within a year or two the machine shop would be ready.

"In general, do not make any waves," Fedor Alekseyevich warned him, "as long as you're doing all right. Take care of your own explosions."

But Andrey did not heed his warning.

"I am in a hopeless situation," he insisted. "I can fail to meet the plant plan, which...."

"Let the plant workers worry about the plant plan!" Fedor Alekseyevich interrupted him. "If they do not like your conditions--let them get their own raw material!"

This generally made sense: as a warning, all the drilling and explosion work could be heaped on the plant workers--let them worry about all that themselves, since the smallest services have become a burden to them.

But the raykom did not support Andrey in this.

"You are a state specialized organization," the second secretary explained to him briefly and drily. "And do everything in a statelike way."

On that same day a long telegram came to the main board from the secretary "concerning interruptions in the work at the mine and the failure to adopt the appropriate measures," in response to which Andrey received an official written demand: "Send your ideas about the machine shop immediately."

After spending a crazy week working with the planning institutes and consulting with them, Andrey sent to Moscow a standard plan for a building and an approximate estimate--and suddenly for the fourth quarter, with no preliminary warning and no explanation, he was allotted 60,000 rubles for construction.

This, of course, was small change, but this small change had to be spent before January.

Andrey tried to refuse it, but nothing came of this.

"You understand," Fedor Alekseyevich suggested to him, "now your main task is to make arrangements and take out financing. If you can just purchase materials and bring them to the industrial site, you understand?"

"And if you do not stay completely within the estimate for the next year?"

"We do not get such funds all at once!" Fedor Alekseyevich exploded because of his lack of understanding. "No, and you cannot foresee them! You are not the only person in the country. We have especially taken money away from housing construction so that you can just get started. And it will be easier for you to get started if you have more than just your own reserve. Do you understand?"

Andrey still did not understand this very well, but everything looked convincing and he was forced to agree.

And from that moment on things were under way: they began research, the drawing up of the standard plan and the coordination.

The division for building up the area assigned for the industrial construction site the most remote and neglected section of the village: it was filthy and smelly. A tiny river flowed there at one time, spreading out over all the lower area only at high water, but then, when the rivulet was dammed up by the mining road which had a culvert running underneath it, the water for some reason began to stay in the lower areas year-around. People began to dump city garbage and all kinds of wastes here, in spite of the signs prohibiting this. Everything became overgrown with willows and clumps of marsh grass.

"For nothing!" Andrey became stubborn in the ispolkom. "What are you laughing at? All I can do is put rubble and gravel in there--it will take no less than a year!"

The chief of the division for building up the territory, a small, thin and evil person, jumped out from behind his desk, ran around his office and stumbled on the legs of the chairs.

"And you would like to be right in the middle of the city, right?" He waved his arms. "Right on the main square, on prepared asphalt?"

"But not in a hole like that!"

"And who will take the hole? The gorispolkom? And who is to build the road to the bridge? And the square next to the movie theater? Or do you think that our budget is a bottomless pit?"

"But none of that has anything to do with me!"

"You do not like it--then go! We have nothing else, we do not have anything!"

When the chief shouted all of his veins stuck out and his entire neck, filled with blood, became crimson. He doubled up his fist as though he was ready to throw himself into a fight--and in general he behaved as though they were talking about whether or not he would be allowed to live.

It was even later when Andrey learned that there dozens of complaints about this marsh in the gorispolkom, and he was ready to complain about his fate: if he had actually stood up and left at that point, the chief would have run after him, and possibly, would have paid for some of the expense.

"And it serves them right!" Andrey showed his inexperience. "That is what you should have done!"

It was not planned for him to have his own boiler at the machine shop. It was thought that it could be hooked up to the city network. But the city networks were too far away and Andrey had to try to hook it to the plant furnace which heated the mining village.

The furnace was old, covered with soot and chipped, almost collapsing, and he was afraid that it would not work, that it could not be hooked up. Then all of the construction lost its meaning: the shop could not exist without heat.

Andrey had known the plant's head energy engineer for a long time and, having heard him, in his presence he leafed through the tattered documentation on the boiler for a long time and with great concern.

"The devil knows," muttered the energy engineer, "what to do with you. You come in like a bolt from the blue.... If only they would have an inspection of the boilers, take a look at it--maybe they would extend it...."

"Akimych, all our hopes are on you alone," Andrey almost implored him. "Put yourself in my place...."

"Get out of here.... I do not understand all this," the offended Akimych muttered. "You are not doing your own building, but in fact you are digging one more hole in the village."

Akimych, taking a slide rule out of his desk, calculated something, silently moving his thick lips, writing the calculations down on a piece of paper, he looked at them and then crossed them out, and then wrote something else down.

"In general it is beyond me," he leaned heavily back against the chair. "The boiler itself has one foot in the grave here. And they do not have me scheduled for repairing it until the next five-year plan...."

"Perhaps I myself can conduct an inspection and patch up the building, huh?" Andrey was forced to suggest.

Akimych, running both hands through his tangled hair, again pondered something for a long time, smacked his lips and shook his head.

"Well, if you have enough money," he agreed without any enthusiasm at all. "Then go ahead...and we will see."

Andrey had no money for the boiler. But he could see no other solution.

"Okay," he thought, tossing and turning through sleepless nights. "We will think of something. We will straighten this mess out...."

Even for communications it was necessary to have additional funds.

The chief of the rayon division, a young, pretty, blond woman, was able to take care of him in a half hour.

"Why do you need overhead lines?" she asked with a charming smile. "Yours is such a solid firm: if there is wind or ice forms of them--everything will be interrupted! Let us lay a multi-cable line. The more since in the future there will be a residential area around your industrial base and it will be necessary to extend cable there anyway. Do you understand?"

She offered Andrey some tea: she sat down across from him behind the desk, she herself put some sugar in his glass, and she settled down. The intoxicating scent of perfume wafted over him in waves.

"And they do not extend aerial lines over such distances any more. It is forbidden!" She touched his hand.

Andrey could easily get hold of a scoop excavator, and the steep cliffs in the trench did not frighten him, since he was an explosion expert--but he gave in to her almost without resistance. He began to think about cable.

But things went worst of all with the railroad workers: he intended to run a short track up to the machine shop in order to deliver the cargo there directly. But the railroad workers demanded that, in connection with this, that an almost 1-kilometer siding be built at the station. They could not even imagine what kind of money that could run into since there was marsh all around....

"But, on the contrary, I am trying to make life easier for you at the station!" Andrey resisted them. "When a car comes to me I can immediately take it where it needs to be...."

"And the maneuvers?" he was asked vaguely by the traffic expert, an elegant, sharp young man, dressed in a new uniform, and probably a recent VUZ graduate.

"What about maneuvers? What maneuvers?" Andrey did not understand.

"For turning over the cars," the traffic expert answered, again vaguely.

"The car will come to me, you understand? To me!"

"And who will deliver it to the branch line and switch it?"

"But how do you do it now?"

"Doing it without maneuvers is another matter."

"That is?"

The traffic expert opened up some orders for him, and without saying anything he pointed out the necessary paragraphs with his fingers and with a condescending smile waited until Andrey read them.

This smile especially infuriated him.

"All right, I will think about it," Andrey, completely confused by the paragraphs, said and stood up. And, slowing down, he added: "Perhaps I can do without the track...."

He added this more to frighten the traffic expert, to give him to understand they were back where they started. But the traffic expert, having listened to him with his previous condescending smile, only shrugged his shoulders and said good-bye with a respectful nod.

Andrey went to the railroad workers time and again later, but he did not firmly defend his own rights.

The cost of all the auxiliary work had long outgrown the cost of the machine shop, but the people in the main board did not want to hear about this auxiliary work.

"Have you not come up with enough requests," Fedor Alekseyevich immediately interrupted his explanation. "Perhaps you want to build a marble staircase, hm? This is your own personal affair and you have to straighten it out...."

"You will understand," Andrey nonetheless tried to convince his superiors. "They will see that I have an extreme need and so they will give me special conditions...."

"They will not set conditions, but try to fool you," Fedor Alekseyevich corrected him. "You will not climb up to heaven on somebody else's back."

"They might try. But how will I counteract this?"

"I do not know. Think. Briefly, these expenditures have not been envisioned in any estimate and will not be envisioned. And do not come to us about this any more!"

Andrey transferred all the management work to the head engineer and his deputies, eliminated all of his immediate duties and handled only this ill-fated construction project, which now took up almost all of his working and nonworking time.

"It was not without reason, not without reason that Fedor Alekseyevich gave his warning!"--these words rang so many times in his ears, but too late. "But why did I get into this anyway? Why?!"

It was in that year that Andrey, barely 30, discovered when combing his hair after a bath that he was graying at the temples....

In the planning institute, where he had gone with an application to coordinate the work on the machine shop, they were over their heads in planning work and so did not want to help him.

"The only thing I can advise you," the head engineer of the institute sighed sympathetically, "is to go to the workers themselves. Get them to work during their free time--we will close our eyes to this...."

It was easy to gather up a group of workers, but it was necessary to take on certain management duties--and this is where Andrey's encounter with the head bookkeeper, Lyubov' Zakharovna, began.

"Andrey Vasil'yevich, dear, you should not do this!" She tried to persuade him, at first cautiously and stealthily. "That cannot be done! These planners will be nonexistent salaries for us...."

"How is that possible?" he asked.

She did not know how it was possible and, remaining silent, continued to persuade him in the same spirit:

"Andrey Vasil'yevich...dear.... You are still so young.... All you do is work, you are going to become.... You are involving me...."

"Well, do not be afraid, no fear," he touched her on the elbow to calm her down. "The wage fund allows us to do this. So everything will be sewn up. And we need the plan right away, you understand? Without it we cannot begin construction."

"But still...Andrey Vasil'yevich, listen to my words." She would not calm down. "Otherwise, you know...because of you!...I will be forced to notify the main board...."

"Well, notify them, notify them." Andrey brushed her aside.

He was convinced that he was doing socially useful work and was not concerned about himself. Moreover, from time to time--especially when something succeeded--he vainglorioously thought that if you were able to disentangle himself, overcome the heap of obstacles that had fallen on him and complete the construction--he would probably be given some kind of award--perhaps even an order....

At first Lyubov' Zakharovna did not call anywhere: she talked and talked and it seemed that she had become reconciled. But when Andrey got in touch with the plant for reinforced concrete items she carried out her threat.

Andrey could assimilate the 60,000 rubles that had been allotted only by placing in the marsh a pile foundation for the mechanics shop. There were no ready-made pilings, but by bartering with two carloads of surplus cement he managed to get the plant to deliver some pilings. True, the plant also needed people to put on the fittings since it was absolutely suffocating from a shortage of working hands.

The wage fund for the administration immediately began to suffer--and Lyubov' Zakharovna, without Andrey knowing it, notified the main board of this.

Fortunately, she gave her information directly to Fedor Alekseyevich, who knew well what it was to have one's own construction project, and with his first words he calmed her down.

"What is he doing, your Andrey Vasil'yevich?" asked Fedor Alekseyevich, "putting state money into his own pocket?"

"I have not noticed anything of the kind," Lyubov' Zakharovna answered, laughing at this kind of reaction from the superiors.

"Then for what...for what!..." Fedor Alekseyevich tapped his finger. "Check on that! And do not intervene in the rest of it."

"But what if an inspector comes?"

"If you do not tell the inspector what he does not need to know everything will proceed normally. That is what you should do!"

Andrey for some reason decided that Fedor Alekseyevich had suggested once and for all how she should behave herself, and that she understood everything.

But it turned out that he was mistaken....

Andrey thought that he had handled very skillfully the filling in of the marsh for the construction site. The transportation shipped blasted rock from the mine to the dumps--rock debris, gravel, clay--and he managed to persuade them to turn the conveyor in his direction. They only had to extend the routes of the trucks a little ways. The transportation workers charged only for this added distance, and not very much money, but Lyubov' Zakharovna in her report to the main board openly explained the increased cost of their basic work: because of the fabricated construction project....

The main board reacted immediately: it changed its planning assignments so that nobody would immediately notice the extra jump in production costs. Fedor Alekseyevich was literally furious about the actions of the nit-picking bookkeeper.

"Are you in charge there or not?" he shouted at Andrey so loud that at times one could not make out the words. "Why are your people losing all their discipline! They make up anything they want to! Speak to her immediately, put pressure on her if you have to! Go through her papers and find something that will make her feel that you have tightened the reins and that she has been acting capriciously...."

Immediately after this conversation with Fedor Alekseyevich, Andrey called the head bookkeeper into his office.

"Why are you doing this?" he asked as softly as possible.

"So that neither you nor I will end up in jail," she responded with a cliche which she had clearly thought about before. "I value you very much and therefore...."

Restraining himself, he again tried to explain to her why the administration needed the mechanics shop, but she did not want to understand anything.

"You know your job, and I know mine." Lyubov' Zakharovna remained stubborn. "And my job is to make sure that everything is legal...."

Then Andrey demanded that she bring in all of her latest reports immediately, from the section documents to the summaries for the main board, and for show, in front of her, he began to look through every bound volume, page by page.

"Why did you not enter these expenditures on production?" he asked from time to time. "Why did you not bring forward the account? Who told you to write off the digging? Are you acting on your own authority? Are you distorting the reports?"

Lyubov' Zakharovna said something to him in response, but he did not hear it well. He found this device that was suggested by Fedor Alekseyevich to be repulsive to him.

"To hell with it all!" he raged, finally, at himself, and flung all the papers away. "She is being nasty, and this means that I must do something even nastier...so that she will be afraid of me, and not vice versa!...."

But then day after day it was as though life itself deliberately forced him to "embrace" Lyubov' Zakharovna.

The work superintendent of the section where the mechanic shop was being constructed, when he came in late for a conference, started to excuse himself by saying that the cement had been shipped to the dacha of the head bookkeeper.

"And there are detours there, and what looks to be 5 kilometers turns out to be 10 when measured," he explained simple-heartedly. "And the road--nothing but holes and ruts...."

"You are taking cement to the dacha still?" Andrey stared at him.

"Yes, I am." Having discerned that he had said something wrong the work superintendent hastily began to extricate himself right there. "It was not at all a matter of the cement.... She had asked for it long ago...and we decided...the universal joint is not the one...and you promised me a new one, Andrey Vasil'yevich...and with the old one I...you understand yourself...."

But Andrey did not pick up on the subject of the universal joint, and insisted on talking about the dacha.

"How much cement have you taken there?" he interrupted the work superintendent.

"I do not remember...." The work superintendent wrinkled his forehead as if he were thinking. "About five sacks, or something...."

"And more precisely?" The work superintendent encountered Andrey's gaze, started breathing heavily, began to shift from side to side where he was sitting, and solemnly said: "More precisely--10."

"And where did you get it?"

"What do you mean?!" The work superintendent even stood up.

"Then why?" Like an interrogator, Andrey would not drop his gaze.

The work superintendent remained silent and bowed his head.

"Well?!"

"Well, it was necessary to pay for the automotive crane and the grader...." he muttered, looking at his heavy cloth boots which were covered with mud. "I had to alter the orders a little bit...because--here a quarter, there a quarter...and my salary is not limitless. And Lyubov' Zakharovna...you understand yourself...."

The work superintendent sunk his head into his shoulders and humbly awaited the shouting, but Andrey, remaining silent and restraining himself, dismissed him with a nod.

This poor slob, who had even lost his family because he had too frequently given half-liters to people from whom he needed work, it turned out, was now under the thumb of Lyubov' Zakharovna, and she could do anything she wanted with him. So this is our demure lady. So this is our law-abider!...

He wanted to call the head bookkeeper in immediately and had even put his finger on the button of the intercom, but, while leaning over the microphone, decided that it was better not to get into a conversation in this condition....

But she, either warned by the work superintendent or having sensed something, came into his office of her own accord.

"May I come in, Andrey Vasil'yevich?"

She looked disturbed: her eyes looked searchingly at him, and her cheeks were feverish.

"Come in," Andrey answered, remaining silent and trying to be formal.

"Andrey Vasil'yevich...." Licking her dry lips, she hastily began to speak. "Some misunderstanding could arise here...regarding various materials...cement, for example, and crossties...but I have a receipt showing that I paid for all of this...that is, everything is legal...."

She cautiously placed the cash orders on the edge of his desk.

"And who gave you the right to take material from the construction site?" Andrey asked.

"Lord!" Lyubov' Zakharovna said, laughing nervously. "You give out carloads of that cement left and right. Then when your own workers...."

"I distribute these for business!" Andrey interrupted her.

"Well, whether it is for business or not," Lyubov' Zakharovna shrugged her shoulders slightly. "If necessary, the appropriate agencies will straighten this out...."

"Listen!" Andrey pounded his fist on the desk.

He probably looked terrible: Lyubov' Zakharovna, without diverting her gaze, moved toward the door.

"I am just stating what is true...." she babbled. "Incidentally...for God's sake...."

She had even started to open the door, ready to rush out into the reception area at any second.

Her fear probably had a sobering effect on him: he grasped his head with his hands, sat there that way, and then almost mechanically pulled the orders toward him.

"How come only three sacks of cement are written down here?" he asked quietly, without raising his eyes to the head bookkeeper.

"And how many should there be?" she asked.

Without saying anything, flexing his muscles, he looked at her.

"All right, all right," she said hastily. "I will pay more...right now!..."

"Generally, look," he said. "If I ever hear of this again...."

And indeed, from that time she held her tongue and never made any complaints either to him or to the main board. She became as respectful and attentive as before. She came in several times to sing his praises, but did not ask for anything.

"I understand," she said, "how all this is for you.... Believe me, I wish to be your ally."

But he did not believe her any more.

Andrey could think of nothing but the start-up of the ill-fated mechanics shop. No matter which way he turned, everything turned out bad. He pushed the do-nothing savages, but what then? He did not know how he would disentangle this entire mess with the construction project. If he were to forget about it all and not assimilate the funds before the end of the year, they would take away the financing for the construction project for the next year. So there was no hope there. It was still necessary to complete the construction of the mechanics shop--so he had to do whatever it took to get more money. Moreover, the main board did not justify his hopes, and he was deprived of support "from above": nobody would cover him in case he....

He could see only one solution, whether he wanted it or not: to bow down before the savages. And he could pay them this way: he could impose part of the expenditures on the PMK, and the other part, his part, he could spread over several months, that is, draw up orders for the savages before spring although the money would not be paid to them immediately. Of course, all this had to be done in conjunction with the head bookkeeper, so that she would know everything, understand everything and help him. "Well yes! There is

absolutely no possibility of expecting help from her!" thought Andrey. "She is just waiting until I contact the loafers."

In despair he called Moscow on the telephone again and asked for additional wage funds.

But Fedor Alekseyevich did not want to hear anything about it.

"Decide for yourself. Take a stand!" he answered drily.

"I would take a stand," Andrey said gloomily, "but you know my relations with the head bookkeeper!"

"Set things right with her!" advised the voice on the phone. "Otherwise you will never get things off the ground."

And then Andrey decided to take Lyubov' Zakharovna with him to the section to speak with the savages: perhaps she would understand that there is no other solution.

"Let it go," he said to her. "I have an assignment for you--to make sure that the actual amounts that have been accomplished correspond to the documents that have been signed."

They got into the Volga and set off for the project.

The mechanics shop, light gray with high windows sparkling in the sun, stood on the edge of the village and rose up over elegant private homes with kitchen gardens that extended off into the distance. One could see it from a long ways away. In spite of the clumps of earth all around and the still-open trenches that went up to the building from three sides, in spite of the mud puddles with little islands of drooping rust-colored grass, this building seemed strong and magnificent to Andrey.

"You are just like Peter the First!" Lyubov' Zakharovna exclaimed. "Amid the forests and swamps and marshes...is that not the way Pushkin put it?"

"And that is not all!" Andrey burst out. "Later we will fence in the entire territory, pave the site and plant trees everywhere...."

But he himself noticed that he was boasting, his face turned red, and he even stuck his finger under his collar, tugged at it and loosened his tie.

There was a lot of work to do inside the building: they were installing the gates, running both concealed and open electric wires, hanging the ventilation pipes on the walls, but everything was going according to schedule, and Lyubov' Zakharovna, probably wanting to flatter him some more, noted:

"In my opinion, Andrey Vasil'yevich, they have even done more here than was projected...."

"But the heating?" Andrey hastened to remind her.

"Well, that...." Lyubov' Zakharovna began to laugh and magnanimously waved her hand, "trivia. Other things have been done instead...."

Andrey wanted to impress upon her that the absence of heating could put a stop to everything; but one could hear the thunder of iron everywhere, there were sparks from electric welding, and moreover the day, as if deliberately, turned out to be dry and warm--they stood squinting in a strip of bright light which was falling through the window, and he thought that the head bookkeeper would hardly understand the urgency of heating.

"Let us go to the office," he invited her into the work superintendent's room.

There, having seated herself at the desk and hastily leafing through one of the files for the plan, he spread out the work schedule before her:

"You see? The PMK was supposed to have released all of the work of a half a month ago. You understand? A half-month! And they have not even begun it yet...."

"Do you want me to impose a fine on them?" Lyubov' Zakharovna hastened to guess his thoughts as usual.

"A fine?" Andrey repeated her question.

Negotiations with the PMK were not included in his plan and they could only put off the time of the meeting with the savages. But he did not fail to give Lyubov' Zakharovna another chance to display her zeal for her job strikingly enough.

"Well," he agreed with deliberate interest. "That is an idea. Try to frighten them. Say that as head bookkeeper something about the bank and something about money that might come in...."

He gave her from memory several telephone numbers at the PMK, and himself having no doubt about the results of the calls and suppressing in himself sparks of hatred for the savages, began to work on the orders for them. He heard about how Lyubov' Zakharovna, unctuously beginning with "excellent--remarkable!" whether, suddenly interrupted, having heard something from the innocent chief of the PMK, Ivan Mikhaylovich, then severely and, as always, conscientiously, began to present what she had been ordered to. The chief apparently interrupted her again and explained something. Lyubov' Zakharovna remained silent for a long time.

"What do you mean transfer money to you?" unexpectedly she exclaimed, disturbed. "And does this mean that this year you will not raise a finger? Is that it?"

Andrey, tearing himself away from his papers, looked at her. The cheeks of the head bookkeeper had turned red--a true sign of sincere agitation.

Suddenly, falling silent, she blew impatiently into the receiver several time, and started to say hello.

"He hung up, eh?!" She threw down the receiver.

It turned out that Ivan Mikhaylovich advised her not really to lose the money but to transfer it into the account of the PMK. And he said that the work would have to be done sooner or later anyway....

"He seemed not to understand that this is a judicial matter!" Lyubov' Zakharovna could not stop. "After all, one could go to jail for this! And then how does one transfer the money if there is no document? Eh? And who will sign such a document? He himself? Or will he try to twist you around his finger? No, nothing will come of it! I will not allow him to draw you into this adventure!"

Generally everything turned out well, even if it was not exactly as Andrey had anticipated! He even got up and, calming down, embraced her from behind by her puny shoulders.

"Yes, yes, you are right," he said. "Although, as I understand it, the PMK is not likely to turn over our money. We are not a profile enterprise for it. Probably the chief simply wanted to meet us halfway. Would you turn it over, and there need be no special difficulties...."

"All right!" Lyubov' Zakharovna shuddered, as if trying to shake off his hand, and he walked away. "But you apparently think that he is acting even...it would seem...nobly, no? But we are not obligated to him for anything...."

"I think," Andrey interrupted her softly, sitting in his chair, "and you, I hope, think also, that this year the PMK will do nothing for us no matter how many fines we impose on them or how many times we take them to court. This is what we must make clear to ourselves at this moment."

"Unconscionable impudence!" Lyubov' Zakharovna would not calm down. "Bandits!"

Andrew felt that although the logic of things already led up to a discussion of the savages, from experience he knew that when the head bookkeeper was in this condition there was no point in discussing anything. But he decided not to put the conversation off until another time: time was of the essence.

"In general," he said, "there is only one solution: to call in the 'savages' and come to an agreement with them."

"Come to an agreement with them?" Lyubov' Zakharovna repeated the question without changing her tune. "Under their pirate conditions?"

"Possibly," Andrey almost nodded.

"Not for anything!" she cut him off right there.

"But what else can we do?" he asked, still restrained.

But Lyubov's Zakharovna turned absolutely crimson!

"But they are all thieves! Or do you not see this yourself? If you stop to think about it you would be encouraging the worst kind of theft! Theft, you understand?..."

Andrey looked at her--at her slyly narrowed eyes, at here hair moving from side to side like a tail, at her moist red mouth with her tiny little teeth--and he thought that it was not in vain that he had recently imagined her as some kind of feline animal.

"Aah, aah!" he thought, walking through the work superintendent's room. "Let everything go to hell! In the end, what can happen? I do not care about her denunciations! Let them take everything and judge whatever they want to! Enough!"

After slamming the door of the office, he walked along all of the bays of the mechanics shop, stumbled over all the uneven spots in the floor, looked in one of the boxes of the work superintendent and asked to see the leader of the brigade of savages immediately.

"I want one foot here and the other one there, you understand?!" he ordered.

It was as though Andrey were afraid that this impulse would leave him and he would cool down, and everything would again as it is now, indefinite.

Lyubov' Zakharovna did not leave the office and, crimson as usual, but now shrinking in a frightened way, quiet, she sat at the desk. She was about to speak but Andrey glared at her in such a way that she stopped in the middle of her word and fell silent.

"Let them listen! Let them!" he thought maliciously. I shall come to an agreement in her presence just to show her!"

The work superintendent returned quickly, but the brigade leader was not with him.

"You understand," Shuddering under Andrey's gaze, the work superintendent explained guiltily, "that Jack said that as of today they were demanding 1,200 on the nose...."

"Scum!" Andrey burst out. "And for what work!"

"In general," without looking at him, the work superintendent finished, "he said also that within a week they would ask for 1,500 each."

"Do you hear?!" Having risen decisively, Andrey bent over the table. "Did you hear?!"

Lyubov' Zakharovna recoiled against the back of the chair and looked at him, frightened. Even the work superintendent walked toward him for some reason, as if he were ready to throw himself in and break up a fight.

But Andrey, after hitting the table hard with his fist, sat down again.

"All right," he muttered through his teeth. "I agree. I, understand?!" He placed the accent on the "I." "Take him the blueprints and prepare all the documents for tomorrow under these conditions. All of them, understand?"

Then he and the head bookkeeper got into the car silently and went to their office.

"Andrey Vasil'yevich," Lyubov' Zakharovna said suddenly, "why did you take me with you today if you had such a conversation in mind?"

"Oh, did you get tired?" he laughed.

"Well, you understand...." She stopped short. "If it had come to a point where you did what you wanted to by yourself. But I would have had to deal only with the papers, perhaps, then...."

"Perhaps and perhaps not!" Andrey interrupted her. "No! I wanted you to express your opinion right there. And I did not want you to lie in wait for me later! Is that clear?"

Lyubov' Zakharovna was silent for a while.

The brigade of savages performed the work in 2 weeks. Now they were not afraid of the cold. The repair work was proceeding in full swing in the mechanics shop. Fedor Alekseyevich called, congratulated them, praised them and told jokes.

In general it is a load off his mind. And in his heart he feels easy and glad. But it is a strange thing: Andrey did not experience either joy or satisfaction....

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HUNGARIAN ECONOMIC ORGANIZATIONS DESCRIBED

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[Article by Laslo Samueli, Institute of World Economics of the Hungarian Academy of Sciences (Budapest): "New Elements in Structure of Hungarian Economic Organizations"]

> [Text] Continuing the subject begun in the article by N. L. Lushina, "Small Production in the Socialist Economy," (EKO, No 5, 1984), the magazine is responding to the readers who wish to acquire a more detailed familiarity with the experience of the CEMA countries regarding this question. We have asked one of the Hungarian economists to give us a thorough description of the practice that has developed in Hungary.

The economic reform of 1968 had almost no effect on the organizational framework of Hungarian industry. Most of the attention was devoted to a changeover from methods of directive-physical planned management to principles of so-called indirect (economic) regulation.

The organizational structure of Hungarian industry has long been characterized by extreme centralization and concentration of production. Immediately after the nationalization of industry at the end of the 1940's, small shops were combined into large enterprises with clear-cut specialization. The largest "burst" of specialization took place in 1962-1964 when the number of addressee enterprises in the system for breaking down the assignments of the state plan was reduced in order to facilitate and simplify the work of the upper level of economic management. During 1950-1960 the overall number of state enterprises decreased from 1,427 to 1,368, that is, by 6.7 percent, and during 1961-1965--to 840, that is, by 37 percent. Centralization continued after the 1968 reform as well. During the decade of 1969-1978 there was a further merging of the 293 state enterprises while there were only 25 cases of deconsolidation or division of enterprises.

As a result, at the end of the 1970's a whole number of branches in Hungary were single enterprises. This degree of centralization exceeded the level that is typical of the majority of CEMA countries.

The organizational structure of Hungarian industry also suffered from the extreme concentration of production. Separate production units (plants, shops) within the enterprises were giants in comparison to their counterparts abroad. According to the comparison made by the Hungarian Central Statistical Administration, in the Hungarian processing industry the average number of workers in these production units amounted to 945, while in Austria there was an average of one-tenth this number per production unit, and in Belgium, Denmark and Switzerland--small countries compared to Hungary--one-twentieth of this number.

The Hungarian economy was harmed by something else--the lack of small enterprises which were capable of rearranging their production flexibly and quickly in order to adapt to changes in market conditions, and were capable of arranging the output of small batches of batching items, instruments and blanks, and filling individual orders. The gigantic sizes of production units frequently impede the introduction of innovations. The possibilities of failure are immeasurably greater at a large enterprise than at a small one.

A sharp deterioration of the foreign economic conditions for the development of the Hungarian national economy forced us to make a new evaluation of the effectiveness of the economic activity of the enterprises and organizations, and to take measures to strengthen their ability to compete and to increase the flexibility of their reaction to changes in economic conditions and the demands of foreign and domestic clients and consumers. Beginning in 1980, the structure and composition of economic organizations has been at the center of the attention of the party and government, economists and the public.

Improvement of the Organizational Structure of Industry

This work began on instructions from the Politburo of the Hungarian Socialist Workers' Party in keeping with a decision of the Council of Ministers in 1980. An interdepartmental commission was created, which, after a thorough investigation, developed recommendations which were then adopted for execution. The main goal of these recommendations was to break down a number of enterprises, separating them into several independent ones.

They abolished 18 trusts and enterprises and created 119 new economic organizations. Trusts were affected especially strongly by this reorganization. Of the 24 that existed in 1979, 9 were eliminated. These were mainly trusts of the food industry which had been created according to the horizontal principle and combined entire branches (wine making, beer brewing, the sugar and tobacco industry, poultry processing and so forth). But trusts such as for coal and road construction were also reformed.

In other branches (machine building, glass, porcelain, textiles and so forth) the large enterprises were retained for the most part, but plants and factories separated from many of them and became independent. Before the campaign for consolidation in the 1960's almost all of them were independent, and some of them had a rich history and enjoyed an international reputation.

The process of breaking down the organizations is still far from complete. Thus in 1983 there was a partial breaking down of the Csepel metallurgical and machine building combine, the AFIT automotive repair trust, the GELKA trust for repairing household appliances and several other enterprises.

It is still to early to evaluate the effect of the reorganization. Having become independent, the enterprises usually change their assortment of products, assimilate new items, and strive to increase exports and to increase their economic effectiveness. In those branches where the assortment of products is not changed (coal mining, the sugar and tobacco industry, road construction), the profitability of production can be increased through direct interest of the new enterprises in profit. One can expect such an effect from strengthening the competition on the domestic market, for example, in the sphere of repair and domestic services or the confectionery industry (here three independent enterprises came to replace one).

A more flexible organizational structure makes it possible for the enterprises to adapt more rapidly to changes in the economic environment. The interdepartmental commission recommended that administrative regulation be eased and that, if necessary, the enterprises be allowed to diversify their activity. Now they can add subsidiary kinds of activity without special permission, particularly scientific research and development and also foreign trade. The Hungarian Ministry of Foreign Trade grants the right to engage in import and export activity.

The diversity of organizational forms will also contribute to more flexible and efficient management. The interdepartmental commission recommended that state enterprises establish daughter organizations. This form makes it possible to create independent economic units of optimal sizes for performing the functions that are necessary to the instituting enterprise.

New Forms of Small Enterprises

The need to create small enterprises to fill in existing gaps in the network of Hungarian management organizations has been considered above from the standpoint of their more flexible and rapid adaptation to changing market conditions and more effective satisfaction of consumer needs. Moreover, new organizational forms make it possible to attract labor resources and monetary savings of the population, and their initiative, which are difficult to utilize in large economic organizations. The population have a greater desire to increase their real incomes as a result of additional labor efforts.

Up to this point the desire from additional income has been realized in socialist countries in a random, frequently unregulated way, in the form of work "on the side," performed during working or nonworking time. This "second economy" plays a certain role primarily in satisfying the needs of the population and first and foremost in the sphere of services. Therefore in the decisions of the 12th VSRP [Hungarian Socialist Workers Party] Congress (March 1980) it was pointed out: "Along with the development of the economic activity of large, medium-sized and small socialist enterprises, along with effective utilization of the supply of their working time, one should encourage fuller utilization of individual and family reserves of labor force. An extremely

large part of the workers are engaged in this kind of labor activity during their free time in order to acquire earnings which benefit both the national economy and the individual. This is an additional resource for development which contributes to flexible satisfaction of the rapidly growing and changing demands and to growth of the national wealth. The economic, legal, administrative and control conditions for this activity should be regulated in keeping with the public interest, and there should be concern to bring this activity within the realm of socialist enterprises."

Beginning on 1 January 1982, an entire complex of legal acts went into effect in Hungary which regulate various kinds and forms of small enterprises and entrepreneurship.

The Small Enterprise

This is a quite new form of management. They can be instituted by ministries and departments, banks, local soviets and state enterprises. The specific nature of the position of the small enterprise consists in that the instituting organization cannot exact (withdraw) its funds. But if a small enterprise has overspent its funds and cannot reimburse them through its own forces, the instituting organization eliminates it. A small enterprise is created for activity which does not require large amounts of fixed capital or significant numbers of workers, but does require economic independence. These are primarily in the sphere of service, trade, public catering and tourism. One can also include here small-series production of parts and components, experimental and testing work for realizing inventions in the most diverse branches of industry and so forth.

Financial regulation (taxation, and so forth) of the activity of small enterprises is the same as for large ones: they must be profitable not as a result of financial privileges, but because of precise and rapid filling of orders, flexible adaptation to the market and, of course, reduction of overhead expenses. This is promoted by the bookkeeping system and statistical reporting which are simpler than those of large enterprises, and the simpler system of internal management and organization of production.

But the creation of these enterprises is proceeding very slowly: by the end of 1982, only 4 small and 6 subsidiary enterprises were created with this organizational form. Considerations of prestige and the material interests of the managers are sometimes related not so much to the profitability of the organizations as to their size and the number of people employed there. The desire to "detach themselves," naturally, is manifested by workers of sections that are functioning well. And workers of less profitable, inefficient subdivisions are interested in retaining their previous position and equalizing their incomes within the framework of a large enterprise. Therefore one can hardly expect much voluntary initiative in the creation of small independent enterprises.

Subdivisions Work Under Contract

In 1980-1981 in retail trade and public catering, individual subdivisions were singled out to work on a contractual basis (rent, contract). The positive experience that was achieved made it possible to extend this form to other branches. Beginning in 1982 state enterprises, industrial and consumers' cooperatives and other economic organizations could change the activity of their subdivisions which employed no more than 15 people over to a contractual basis.

An agreement is concluded with a private individual for a period of no more than 5 years, according to which he is granted the right to conduct economic activity in the subdivision (division) of the enterprise for the payment that is agreed upon. A public competition (auction) is declared beforehand: the agreement will be concluded with the party who makes the highest bid. Any person with the appropriate qualifications can offer his services if he has the proper work tenure, has labor relations with the enterprise or is prepared to enter into them, does not have a conviction for a deliberate crime, and has not dissolved an agreement with the given enterprise within the past 3 years. There can be not one, but several (but no more than 5) applicants who have concluded the appropriate civil agreement among themselves.

The party who concludes the agreement independently organizes and conducts economic activity on behalf of the enterprise, but at this own risk. He is obligated to make a firmly fixed payment to the enterprise regularly, including contributions for social security of workers in the given economic unit, amortization deductions, rent payment for premises or structures, and also contributions to the profit of the enterprise. The sum of the payment remains unchanged as long as the agreement is in effect.

The workers of this kind of subdivision (as was stated above, there can be no more than 15 of them) conclude a labor agreement with the enterprise which has been given the right to hire and fire them. But it can take advantage of this right only after having considered the opinion of the manager of the subdivision. In practice this means that the workers are hired only with his agreement. The manager of the economic unit can enlist in the work members of his family or close relatives (children, parents, brothers, sisters) without concluding a labor agreement with them.

Wages are paid to the workers of the contracting unit at the average level for the enterprise. In the labor agreement a firm rate is set for each worker, and it is increased each year by a percentage which is agreed upon. It serves as a basis for deductions into social security, sick pay, pensions and so forth. The same calculated rate for social security is set for the manager. But his income is formed from the earnings from the sale of products and services, minus: production outlays (including guaranteed wages for workers), payments to the enterprise in keeping with the agreement, and the general income tax. The manager must distribute some of his net income among the workers of the subdivision, at his own discretion, but these payments are not counted in their wages and are not taken into account in the amounts of the stipends, pensions, and so forth.

Such a system provides for greater collective interest in the economic results. As was shown by the experience of retail trade and public catering, the enterprises usually transfer to a contractual basis those divisions and institutions which are operating at a loss, thus achieving a dual advantage--they are relieved of the losses and they obtain additional profit. There is no need to speak of the advantage to the consumers from the improvement of the quality of the service, the expansion of the assortment of products and the enlivenment of the "struggle for the buyer or client." As was already noted above, this form has become widespread in trade and public catering. In other spheres of the national economy it is not very popular yet, which is explained, probably, by the large risk and the serious material consequences in the event of failure. Obviously, one can expect this form to become widespread primarily in the sphere of services.

A system of accounts with the enterprise or cooperative with a general (previously fixed) sum can be introduced into the activity of separate small divisions, services, shops, stores and so forth.

The savings on expenditures (for example, the expenditure of fuel in the transportation service) or the earnings (profit) in excess of the established sum are distributed among the workers of the subdivision. The advantage of this system are the following: bookkeeping activity is simplified, and the workers have greater independence and interest in economizing on raw and processed materials and in improving the results of the economic activity. In Hungary this form is not yet being utilized in the state sector, but it has become widespread in the cooperative sector.

Economic Labor Communities (KhTS)

These are voluntary associations of private individuals with the goal of joint activity in service, small-scale production and other spheres. They join from 2 to 30 people together. The KhTS typically consists exclusively of workers and pensioners of a given enterprise and it functions during nonworking time. It is not an organizational subdivision of the enterprise, but it depends on it partially, since the local authorities (rayon soviet) officially register the KhTS only with the preliminary agreement of the director of the enterprise. The enterprise gives the final guarantee of the commitments made by the society. The directors give their consent to the organization of the KhTS, strictly stipulating the realm of its activity or responsibility to fill orders (render services) exclusively to a given enterprise, which is usually done. In all other relations the enterprise and the KhTS freely agree on payment for the use of premises or fixed capital, the price of raw and processed materials, and the payment for services and overtime work.

This form makes it possible for the enterprise to use its equipment more effectively, and to attract additional labor force during periods when there is a critical need for it without turning to hiring or violating the rules that regulate overtime work and the wage fund. The possibility opens up for workers of the enterprise to increase their incomes legally through additional work at their own work station, in keeping with their occupations and skills. This new form of organization has become widespread in a short period of time in various branches of industry, construction and transportation. By the end

of 1982, 500-600 new societies were appearing each month, and in the first months of 1983--700-800. The statistical services are not managing to publish precise information.

According to a selective investigation of the Ministry of Finance, at the beginning of 1983 75 percent of the KhTS's were operating only with orders from the base enterprise and approximately 5 percent with orders from outside. Of the KhTS's that were investigated 53 percent were engaged in the basic production activity, about 20 percent in subsidiary activity (repair and so forth), 20 percent--organizational, transportation and construction activity, and only 7 percent--nonindustrial activity (cleaning the premises, tending the plant territory and so forth). The net income of the workers after paying income tax exceeded the average hourly wages 2-3-fold. But if one takes into account that this work is done during nonworking time, when it is compared to the double rate paid for overtime, it is only 30 percent greater. The hourly output, however, are much higher than usual so that the expenditure of wages per unit of product turns out to be less.

The higher labor productivity in the KhTS is explained not so much by the greater intensiveness of the labor as by the better organization of the labor process, its smoothness, the lack of idle time and so forth. This contributes to improving the organization of production at the base enterprise and places stricter demands on the work of its other subdivisions.

But there are also phenomena which give rise to conflicts. We are speaking not simply about higher earnings--in the majority of cases they are justified by the additional labor expenditures--but about the payment for labor and its intensiveness during the course of the "normal" 8-hour working day. If because of the poor organization of production, low rates, limitations on the expenditure of the wage fund and so forth, it is disadvantageous for the worker to exert greater effort during his basic working time, he can begin to save his energy for additional work, thus contributing to the deterioration of the situation. The solution to this situation is changing over to more effective bases for the organization of production and revising the entire system of material incentives which at the present time does not allow proper payment for intensive and high-quality work. It seems that the KhTS's will accelerate this process at the enterprises.

The economic labor community (KhTS) is at the same time a new form of collective management activity which has arisen on the basis of new legal acts. The KhTS does not have the rights of a corporate body and operates only where this is stipulated by the rules. Thus in the mining industry, the manufacture of patent medicines, insurance, the purchase of gold, silver and platinum, the production of tobacco items, mediation during the sale of mobile property and so forth, only state management organizations can be involved.

Members of an KhTS can engage both in basic and in additional labor activity (combine jobs during their free time). All members of the KhTS are obligated to work personally, apart from the contribution of property, for which they are given a certain remuneration.

A typical feature of the KhTS is that it conducts economic activity only collectively, but all of its members are joined together by unlimited material liability, and they are responsible for the commitments of the community not only with their share, but also with their personal property. This strict measure is necessary in order to avoid the irresponsibility of KhTS members.

This form of small entrepreneurship is extremely flexible and changes its form depending on the nature of the economic activity. At the present time more than one-third of the KhTS's are engaged in the sphere of mental labor (technical expertise, planning and design work, computer programming, and so forth) and about one-third of them are in industry and construction.

The Small Cooperative

This is a cooperative organization which includes from 15 to 100 workers. Its members (founders) can be:

people who have selected the cooperative as their main place of work;

people employed at other enterprises or cooperatives who wish to work here during their free time (then it is necessary to have the agreement of the main place of work);

pensioners working in the cooperative within the limits of working time allowed them by the rules (no more than 840 hours per year);

students of VUZes--with the agreement of the training institution and within the limits of the permitted number of hours of working time.

A small cooperative can carry out any economic activity allowed for large cooperatives with the exception of agricultural production and work in the sphere of culture (for example, teaching music).

The initial stock in a small cooperative is formed from shares of its members both in the form of money and property (structures, premises, equipment, instruments, means of transportation and so forth). Share contributions can be compulsory or voluntary. The amount of a compulsory share is determined by the charter of the cooperative or a decision of the general meeting, and its minimum amount is the sum of two months' wages for which stock certificates are purchased. Voluntary contributions can vary in nature: the property share for which the cooperative member is reimbursed in an amount stipulated upon entry; monetary loans to the cooperative or special-purpose share contributions for which cooperative members receive loan interest or an additional portion when the economic results are distributed at year's end.

Small cooperatives are strictly self-controlled. In addition to the general charter, in a general meeting they develop the policy for internal self-control which regulates all procedural questions. The highest agency is the general meeting in which each member has the right to a vote, but only one, regardless of his number of shares or number of working hours. The general meeting is convened four times a year, and at it they consider production plans, capital investments, the distribution of income and so forth. Those

present at the general meeting select a board, a control commission and an arbitration commission for labor conflicts. In cooperatives where the number of members does not exceed 30 they do not establish either a board or other commissions. In adopting a charter those attending the general meeting decide whether the chairman and his deputy will be released from their production activity or if they should perform these functions on a public basis.

Members of the cooperative are not guaranteed the full wages stipulated according to the labor agreement (as is generally the case at industrial enterprises), but only a particular minimum. It is now established in the amount of 1,350 forints per month and 7.1 forints per hour.[1] The amount of wages in excess of this minimum which are paid during the course of the year is regarded as an advance from the annual participation in the income of the cooperative. If the annual balance turns out to be negative, these advances have to be returned to the treasury of the cooperative.

The gross income--the total earnings from economic activity minus material expenses--is subject to income tax in the amount of 28 percent (in the sphere of service--20 percent and in barber shops--15 percent). Small cooperatives have the right to make contributions for maintaining their central agencies and to pay dividends on shares and special stock certificates from the income before it is taxed. After the income tax is subtracted part of the income goes for the development of production and reserves and the rest is distributed among the members of the cooperative. There is no special regulation of the wage fund and private incomes are regulated only by the tax on the gross income.

At the end of 1982 there were 139 small cooperatives in the country with an overall number of 5,359 members. Of these 4,822 were working full time and 537 were combining occupations. Approximately 70 percent of the cooperatives appeared on the initiative of the citizens, and the rest--through reorganization. It is curious that the average number of workers in these cooperatives is 20, while regular cooperatives have three or four times more.

The majority of small cooperatives have appeared in the machine building and wood processing industry and in construction. This already shows that this form augments the activity of large economic organizations. Because of the simpler and more flexible organization of production and also the direct dependency of private incomes on the results of economic activity, the earnings of workers in small cooperatives are 15-20 percent higher than at state enterprises where the labor productivity is higher.

The creation of small cooperatives involves considerable difficulties, for example, a shortage of financial funds at the beginning of the activity. It is typical of the country's present economic situation to have general limitations on the volumes of capital investments. The state banking system does not have additional funds for financing the activity of new enterprises and the mechanisms have been created for transferring free funds of other economic organizations and the population. Let us note that the loan interest which the cooperative pays on its share contributions and special-purpose loans of its members exceed by 2-3 points the interest rate for limited-term deposits in state savings banks. This additional income far from compensates

for the risk of using the money of the population for a new economic undertaking.

The Branch Cooperative Group (OKG)

This new form of cooperative organization arose on the basis of the practice of agricultural cooperative groups which have worked well for almost 10 years. The OKG is largely similar to the small cooperative: it can engage in the same kinds of activity, it has a similar system of internal self-control, the members are also interested in maximizing the gross income, and the conditions for entering it are the same.

The main distinction is that the OKG is not a corporate body and can act only within the framework of some kind of cooperative. Agreements are concluded on behalf of the cooperative and it is the final guarantor (provider of the guarantee) of the commitments of the cooperative group. Another distinction is that the OKG is a typical form for work with combination of occupations during free time and after hours.

The OKG can be formed by five people. They find a cooperative that is willing to sponsor them and they conclude an agreement to transfer for their use premises, equipment, materials and so forth for a fixed payment or for shared participation in the income.

A typical example of a Budapest industrial cooperative is Trakis, which was described by the economist D. Varga in the journal VALOSHAG. This cooperative produces transformers, x-ray and other electrical equipment. It is an enterprise with 600 employees. In Trakis they have organized 10 branch groups with a maximum of 75 members in each. One of the motives for organizing these groups is the large number of small and individual orders which the cooperative regularly has to decline. An economically profitable series of transformers should cost no less than 1 million forints. But an OKG can also fill smaller orders. The cooperative did not previously organize technical servicing of the equipment it produces, and now the OKG has taken over this business. They take into account the desires of the clients with respect to the time periods and other conditions for filling the orders, they operate obsolete and surplus equipment advantageously, and they utilize raw and processed materials economically. Therefore the personal incomes of members of these groups are higher than the average for the cooperative. It is also significant that these groups are organized (or participated in) by the best workers: otherwise they would generally not be accepted by the cooperative because their pay would not be high enough because of equalization. In cooperation accounts with a fixed sum have become much more widespread than they have in state industry. In 1982 they were used in 2,650 divisions of cooperatives with an overall number of 4,220 workers, and mainly in the sphere of consumer services (for example, barber shops). They employ an average of 1-2 workers.

The Small Craftsman

The oldest and for a long time the only form of private economic activity in industry, construction and consumer services was the single handicraftsman. During past decades the party and government have attached great significance to the expansion of the role of small craftsmen in satisfying the needs of the population and various economic organizations. Due to a change in the public estimation of their position and role in the socialist society, the number of handicraftsmen is increasing and as of 31 October 1982 it exceeded 114,000. Half of the consumer services are rendered to the population by them.

The new legislative regulation has made a number of changes which have expanded the possibilities of economic and production activity of handicraftsmen and their cooperation with large socialist economic organizations:

They are allowed to engage in any kind of industrial and economic activity with the exception of those which are monopolies of state organizations. Thus private activity is permitted in transporting cargo and passengers (taxis). More than 2,000 permits (licenses) were issued in 1982.

In the interests of sparking market competition, local soviets are obligated to satisfy the requests for issuing licenses to all people who meet the requirements established by law. They do not have the right to find out, for example, whether another cobbler or tailor is needed in a particular village.

The quantitative limitations have been removed from the acquisition by state organizations of goods and services offered by handicraftsmen.

Enterprises, cooperatives and institutions are permitted to rent to handicraftsmen unused structures, premises, machines and equipment for the appropriate rental payment.

The handicraftsman for whom this is the basic activity and not a side source of income has the right to employ in his business up to six family members and to hire up to three workers or home workers. The only limitation is that the overall number of workers, home workers and relatives must not exceed nine. If the handicraftsman has the required qualifications, he can have up to three students.

Handicraftsmen are permitted to enter a KhTS and organize temporary labor communities for carrying out a joint order, for example, the construction of a building. The overall number of workers employed in such a temporary labor community of handicraftsmen cannot exceed 30.

It is still too early to judge whether or not the new forms of small enterprises and entrepreneurship in the state, cooperative and private sectors are helping to create small-scale economic organizations which are vitally important for the effective activity of large enterprises and the economy as a whole. The process has only begun. Will it be possible to overcome the initial difficulties and achieve significant success? By March 1983 there were more than 13,000 small economic formations with an overall number of more

than 60,000 employees. More than 75 percent of them were employed in industrial production activity. Two-thirds of the workers of these new economic organizations retained their previous work positions, that is, they are combining occupations. Most of the new organizations have appeared in the private sector, but in terms of the numbers of people employed, organizations of the state cooperative sector prevail.

Of course the new forms of small enterprises have not played and apparently will not play a decisive role. Currently, the proportion of them does not exceed 1 percent.

The experience that has been obtained will apparently begin to be taken into account in time with the improvement of the organization of production and management within large state and cooperative enterprises: it is necessary to increase the direct material interest of the workers in the results of the economic activity, to expand their self-control and participation in the adoption of economic decisions, and to create conditions for creative initiative. This will undoubtedly increase the effectiveness of the entire socialist national economy.

FOOTNOTE

1. According to the official exchange rate in March 1983, 100 forints were equal to 5.9 rubles (ed.).

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BOOK ON LABOR PRODUCTIVITY REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 8, Aug 84 pp 211-218

[Review by V. I. Zanin, candidate of economic sciences, Institute for Increasing Qualifications of the USSR Minstankoprom (Novosibirsk), of the book "Proizvoditel'nost' truda -- vazhneyshiy faktor povysheniya effektivnosti proizvodstva" [Labor Productivity -- A Most Important Factor in Increasing the Effectiveness of Production], ed. by P. A. Khromov, Moscow, "Nauka", 1982]

[Text] The monograph is attractive because of its independent approach to the essential problems facing science and practice in the area of labor productivity and its material which is replete with figures. The thesis with which the book opens concerning the functional role of live labor in the process of production hardly seems new. But in recent years this principally important point of Marxist economic science has at times come under doubt either directly or indirectly. We have in mind the spreading of the idea of the possibility of the interchangeability of personal and substantial factors in the labor process. It is considered correct, say, to "co-measure" labor force and fixed production capital. They design coefficients which lead to a "unified measurement" of labor expenditures and circulating capital.[1] Therefore P. A. Khromov's assertion that "the significance of life labor cannot be related only to the quantitative role of this factor, and it is also necessary to keep in mind the especially active role of the subjective factor" (p 3) is not at all banal.

The idea expressed by the author in the first chapter concerning the need "to expand the sphere of application of specific indicators of labor productivity" which now characterize the output of one-fourth of the industrial workers (p 36) is promising. The suggestion is not essentially a new one. But the fact of the return to this idea shows its viability. It should be noted, however, that the undoubted advantages of specific measurements of labor productivity[2] at the level of individual enterprises and branches are extinguished by the all-encompassing indicator of output according to the commercial (gross) product in industry as a whole. The logically consistent development of the idea of differentiated indicators of output would be, it seems, the restoration in the practice of statistical accounting of the index of Academician S. G. Strumilin.

In the second chapter (author R. V. Gavrilov) there is a discussion that is a nonpolemical discussion of the merits and shortcomings of the indicator of normative net output (NChP)--one of the two that are included in the evaluation of labor productivity. As we know, this indicator has undergone extensive experimental verification for a number of years. But "the first time the experience was generalized somewhat one-sidedly," as is noted in the literature with exaggerated delicacy--"reliance was mainly on the merits of the NChP indicator, and the difficulties and unsolved problems of its application were not analyzed sufficiently."[3]

This cannot be said about the second chapter of the monograph. Moreover, a calm businesslike description of the shortcomings and advantages of the indicator under consideration leads to the idea that the NChP indicator owes its current rank largely to the organizational persistence of its proponents. Now, when the main task is still initial assimilation of the new measure of output, questions of the prospects for its utilization are pushed into the background. R. V. Gavrilov has not lost sight of this important aspect. Especially crucial is the posing of the problem of how "the revision of the output norms will be reflected in the volume of net output. If there are no adjustments for a reduction (increase) in rates, during the time when they are in effect the normatives will depart from actual labor expenditures" (p 47). Being one of the appreciable and most dynamic constituent parts of the net output, wage expenditures exert the strongest influence on the ratio between the real and the normative values of this indicator. Consequently, the complexities of reducing the normative and actual amounts of labor expenditures to a comparable form are inevitable. The time intervals for revising the established normatives are not completely clear. During the course of preliminary discussions this question did not draw the proper attention, and even now it is not fully worked out in terms of methods. This question is raised in the monograph, and this in itself is valuable.

In the third chapter (authors N. S. Maslova and E. B. Figurnov) they investigate the influence of individual factors on the development of employees in industry. The complexity of the problem is shown by the fact that now two-thirds of the citywide increase in labor productivity is subjected to statistical "deciphering" for the various factors. Thus during 1971-1981 the introduction of measures for new technical equipment and scientific organization of labor provided for 68 percent of the overall increase in labor productivity in industry.[4]

According to the authors' calculations, the undistributed residual is half this much (p 74). Although their result is also based on official publications of the USSR Central Statistical Administration, such a disparity is no accident. The fact that not all is well in the section responsible for economic measurements is shown by the cardinal differences in the evaluations of the roles of the two main groups of factors--new technical equipment and scientific organization of labor--according to the general industrial results and according to data from selective investigations (pp 73, 79). The most obvious reason for the disparity is--" ... the incompatibility of the classification applied in statistics of annual and one-time investigations of factors in the growth of labor productivity both in terms of the introduction of new technical equipment and especially in terms of the introduction of

measures for scientific organization of labor" (p 80). The conclusion is quite justified. Let us recall also that many specialists insistently refer to the incompatibility of the list of factors in the dynamics of labor productivity in planning with the information envisioned by the accepted forms of statistical accountability. The question of the comparability of data concerning the main factors in the growth of labor productivity is of principal importance and to delay even a temporary solution to it is especially unjustified.

In recent years much has been said about the increasing negative influence of natural factors on the effectiveness of public production (including the extraction branches of industry). Selective investigations conducted by the USSR Central Statistical Administration confirm this (p 79). It is worthwhile, however, to draw attention to the fact that in the overall increase of labor productivity of industrial workers, the negative influence of the deteriorating natural conditions is quite modest: 2-5 percent as compared to 40 percent for the positive influence of measures for new technical equipment or scientific organization of labor (p 79).

Success in solving problems of increasing labor productivity depends largely on improvement of forms of material incentives. Considering the problem in the fifth chapter, its author, N. S. Maslova, devotes special attention to the generalization of the wealth of experience of recent years. The systematization which she proposes convinces us that because of the greater independence in the activity of local production subdivisions in relation to material incentives, it has become much more flexible and differentiated. The positive results achieved initially at individual enterprises (VAZ [Volga Motor Vehicle Plant], the Shchekino Khimvolokno PO [Production Association] and others) is now becoming common property. This fact is undoubtedly gratifying, but there is no question about the need for further steps. In this connection there would be some point in discussing certain proposals which would appear to be quite questionable.

On p 128 the author suggests "including in the wage rate system a new indicator--the output from workers in each category ... so that the workers within one skill group would have different pay, depending on the level of labor productivity that is achieved." This is not completely clear. If one has in mind the piece-rate worker, there is no need for this since his earnings (not counting bonus payments) are directly dependent on the level of output. If one has in mind the time-rate worker, it is necessary to take into account his individual productivity. And if such a thing were possible, it would hardly be expedient to keep the worker on time-rate pay.

N. S. Maslova goes on to say that she considers it useful "to establish two rate schedules at one enterprise (shop) ... so as to differentiate the wages of workers according to the quality of labor, taking into account labor discipline, defective work, idle time, and so forth" (p 128). What then is left of the wage rate system as a means of unified statewide regulation of wages? Adding to the list that is presented, the author suggests establishing "special rate schedules which are higher for the largest enterprises of the country." It sounds like an apotheosis when she recommends the expediency of " ... permitting the associations (enterprises) to establish higher time-rate

wages ... for particular periods for individual shops, sections, brigades and workers who master new technical equipment, new products, new equipment, new output norms and so forth" (p 128).

Let us repeat once again that such proposals clearly are not sufficiently coordinated with the present understanding of the role and functions of the wage rate system (the more so since in view of the institute of temporary norms, many problems are results precisely with their help, along with the wage rate system). On the pages of the magazine SOTSIALISTICHESKIY TRUD there is now a lively discussion of the article by the chief of the administration for the organization of labor, wages and personnel of the USSR Minstankoprom [Ministry of the Machine Tool and Tool Building Industry], I. Andrianov, "On Further Improvement of the Organization of Wages in Machine Building."[5] One of his proposals is to establish separate wage rates for workers of the main and auxiliary production. As compared to the list for differentiation of indicators recommended by N. S. Maslova, I. Andrianov's proposal appears more moderate. But it does not find support from all participants in the debate either.[6] Thus, considering the extremely timely posing of the problem of the need to improve one of the elements of the wage rate system, the author of this review (along with other specialists) does not fully support the proposed methods of solving it.

In 1982 a fact-filled monograph was published by the author of the sixth chapter, L. S. Sbytova, "The Structure of Employment and the Effectiveness of Production" (Moscow, "Nauka", 1982, 175 pages). The two publications follow one another naturally. One can even say that the chapter is a kind of "summary" of the book which appeared at the same time. This fact explains why the chapter is clearly over-saturated with figures and brings up an extremely broad range of problems for discussion.

Let us say first of all that L. S. Sbytova considers the factor of the dynamics of labor productivity which operates not on a low, but on a nationwide, national economic level: "Savings on expenditures of live labor takes place not only in the process of the utilization of labor force in production, but also as a result of efficient branch and territorial distribution of workers and a correspondence between the supply and the public demand for labor force" (p 180). The qualitative peculiarity of the influence of the structural factor of employment on the effectiveness of public production is, as we can see, quite clearly emphasized. But in the interpretation of the object of its application, the author's position seems less definite. Initially (p 182) it is said that " ... the disclosure of the role of the structural factor in economic growth--is essentially an analysis of the branch distribution of employees and changes in this." Then (p 183) it is said that "one of the most general indicators of the effectiveness of the structure of employment ... is the change in the distribution of workers between material production and the nonindustrial sphere." It is obvious that the objects are not adequate to one another. It also remains unclear how L. S. Sbytova views the structural factor of employment which influences the effectiveness of public production and the intrabranch distribution (redistribution) of the workers.

It is a pity that the author does not give clarifications of the methods of calculating the influence of the structural factor in the USSR national economy during 1960-1980, but the results are extremely interesting and, it seems, deserve to be reproduced on the pages of EKO. Judging from the data of L. S. Sbytova, the share of the structural factor of employment in the overall increases in productivity of public labor are as follows: 1961-1965--31.6, 1966-1970--8.6, 1971-1975--5.3 and 1976-1980--5.1 percent. The changes are striking: while during the first half of the 1960's the structural factor in employment produced approximately one-third of the total increase in the productivity of public labor, during the past 15 years its role dropped to the third echelon. And this means that now the dynamics of labor productivity have practically been deprived of such an accelerator as the structural factor of employment.

Recently there has been more and more discussion of the need to account for the labor force not only in terms of the impersonal indicator of conventional savings on labor expenditures, but also with a mandatory breakdown into the actual (real) release of workers within a production subdivision (enterprise, shop) and the relative savings on the number of personnel brought about by the increased productivity of the labor of the previous workers. Practical steps are being taken in this direction.[7] This problem does not escape the attention of L. S. Sbytova (p 224). But the brevity of her conclusion does not enable one to think that the question as understood has been given any methodological advancement.

In the ninth chapter, "Questions of Labor Productivity at the Level of Regions of the Country" (author L. P. Kupriyenko) there is an analysis of certain aspects of a little-studied problem which, in spite of all its importance, still has not occupied a worthy position in economics literature. While giving the author his due for trying to fill such an obvious gap, one still cannot agree with some of his solutions and conclusions.

L. P. Kupriyenko has every reason to discuss the incomparability of indicators of labor productivity which are calculated in terms of the national income and the gross product (p 304). There is no question that the incomparability reduces the possibilities of economic analysis of the productivity of public labor on the republic and unionwide levels. However one cannot understand the author's conclusion that the problem of comparability (at all levels--enterprise, association, branch, rayon, republic) will solve itself with the universal changeover to the NChP indicator. In the author's opinion, with the introduction of this measurement "there will appear simultaneously the possibility, on the basis of branch indicators calculated in terms of the NChP, of determining more precisely the generalizing indicator of labor productivity (in terms of national income--V.Z.) in the economy of the republic as a whole" (p 304). It is difficult to agree with such an optimistic conclusion. It is known that the output indicator according to the NChP is distinguished from the indicator of labor productivity according to national income by its structure (because of the turnover tax). This alone makes it incomparable with the indicator of newly created value (national income). Further, the normative net output reflects (as follows from the term) not the actual amount of the net output, but an essentially different one, which is measured by a different, normative scale. The problem of

comparability thus continues to be a real problem, even with the introduction of the NChP. One should look for ways of solving it in the areas which were discussed (to be sure, in a different connection) by the authors of the first two chapters of the monograph: in more extensive utilization of physical output indicators and the labor method of measuring labor productivity.

There are also doubts about another important conclusion of L. P. Kupriyenko. Rejecting the distinctions in the absolute levels of national income, she writes: "The tendency toward a slow equalization of the levels of labor productivity in the republics (in terms of national income--V.Z) shows that the effectiveness of life labor in a number of them is not increasing actively enough" (p 306). Complaints about insufficiently great effectiveness are always justified. But can this be shown by the differences in the levels of productivity of public labor? Obviously not. When comparing the regional levels a decisive role is more likely to be played by the existing structure of the regional economy. Therefore the absolute levels and their dynamics in the various republics cannot show precisely a strengthening or weakening of the activity of the immediate participants in production.

Although this review concentrates on what seem to be certain pivotal points of the monograph, the overall evaluation is based, of course, on all of its sections. In spite of their unequal value in terms of the depth of presentation and the scale of the issues that are raised, economic literature has been augmented with a work full of information. It reflects the level that has been reached in scientific research on the crucial problem of labor productivity and it creates the necessary prerequisites for raising this level further. Perhaps the book will not become a ready reference for practical workers. But everyone who is interested in problems of labor productivity in more than just its utilitarian aspect will find the book interesting.

FOOTNOTES

1. See the collection: "Problemy teorii i analiza effektivnosti obshchestvennogo proizvodstva" [Problems of Theory and Analysis of the Effectiveness of Public Production], Moscow, "Ekonomika", 1982.

2. According to the evidence of D. V. Savinskiy, the USSR Central Statistical Administration conducted a parallel accounting beginning in May 1943, but beginning in 1946 the "calculation of the index of fixed composition was discontinued in the works of the Central Statistical Administration." D. V. Savinskiy, "Kurs promyshlennoy statistiki" [Course in Industrial Statistics], Moscow, Gosstatizdat, 1960, p 170. A similar undertaking associated with the name of S. G. Strumilin took place in the 1920's.

3. A. Semenov, "On the Normative Net Output," VOPROSY EKONOMIKI, No 6, 1982, p 72.

4. "Narodnoye khozyaystvo SSSR. 1922-1982 gg." [The USSR National Economy. 1922-1982], Moscow, "Financy i statistika", 1982, p 129.

5. SOTSIALISTICHESKIY TRUD, No 8, 1981.

6. See the collection of responses to the article by I. Andrianov in the magazine SOTSIALISTICHESKIY TRUD, No 11, 1981 and No 7, 1982.

7. See the article by the deputy chief of the administration for labor and wages of the USSR Minsel'khozmash [Ministry of Tractor and Agricultural Machine Building], V. Kruglikov, "The Real Path to Economizing on Labor Resources" (a branch program for reducing the number of working positions). The ministry developed a program whose point is extremely simple: instead of the traditional "conventional" release of workers, to actually reduce the number of working positions so that nobody would be hired to fill them (SOTSIALISTICHESKIY TRUD, 1981, No 5 p 59).

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